A STUDY TO ASSESS THE EFFECTIVENESS OF REFLEXOLOGY ON PAIN AND ACTIVITY OF DAILY LIVING OF OSTEOARTHRITIS PATIENTS ATTENDING OUT PATIENT DEPARTMENT OF DR. KAMAKSHI MEMORIAL HOSPITAL, AT CHENNAI

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A Dissertation submitted to

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

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In partial fulfillment of requirements for the degree of

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ABSTRACT

A study to assess the effectiveness of Reflexology on pain and activity of daily living of Osteoarthritis patients attending outpatient department of Orthopedic medicine at Dr. Kamakshi memorial Hospital, Chennai.

INTRODUCTION

Oteoarthritis, or degenerative joint disease, is a chronic, slowly progressing disorder that causes deterioration of articulating cartilage. It affect weight – bearing joints (Hips & Knees) as well as joints of the distal interphalangeal and proximal interphalangeal joints of the fingers.

The pain and disability associated with Osteoarthritis affect approximately 10% of old age. Osteoarthritis is forecast to become the 4th leading cause is disability worldwide by the year 2020. The prevalence of Osteoarthritis is high in India, ranging from 22% to 39% in different part of country.

During the clinical experience the researcher has experienced in the ortho department as the day to day the outpatient of Osteoarthritis were increased and their inability to work the routine activities. They received the medical treatment only. Reflexology is a complementary therapy and also a non pharmacological intervention with no risk, which has possible benefits to the patient to reduce the feeling of joint pain and improve the activities of daily living.

OBJECTIVES

1. To assess the pre test level of pain and Activity of Daily Living among Osteoarthritis patients between experimental and control group.
2. To assess the post test level of pain and Activity of Daily Living among Osteoarthritis patients between the experimental and control group.
3. To compare the effectiveness of reflexology on pain and Activity of Daily Living among Osteoarthritis patients between the experimental and control group.
4. To find out the association of the level of pain and Activity of Daily Living with the selected demographic variables among experimental group.

METHODOLOGY

The conceptual frame work adapted for the study was based on modified J.W. Kenny's open system model.

In view of the nature of the problem, to accomplish the selected objectives the Pre test Post test control group design was selected. The sample consists of 60 Osteoarthritis

patients in which 30 patients were in experimental group and 30 patients were in control group randomly selected. The tool used for the data collection procedure is verbal descriptive scale and modified Health Assessment Questionnaire (Activity of Daily Living scale) to assess the effectiveness of Reflexology.

Pre assessment was done for experimental and control group after obtaining the informed consent. Confidentiality was maintained. Reflexology was performed for the experimental group for 7 days. Post assessment was done after 7^{th} day of intervention. The data was analyzed and interpreted by using descriptive and inferential statistics.

RESULTS

The results showed that the effectiveness of Reflexology on pain level reduced to mild (83.3%) & moderate (6.7%). Activity of daily living is improved in High level activity (96.7%) and middle level activity (3.3%). It shows that significant at $P<0.001$ in the experimental group. This shows the net benefit of this study.

CONCLUSION

Reflexology was effective complementary therapy for Osteoarthritis patients to decrease pain and improve the activity of daily living.

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CHAPTER – I

INTRODUCTION

Health is a fundamental human right and a worldwide social goal. Health is necessary for the realization of basic human needs to attain the status of a better quality of life. The goals of the healthy people 2010 are to enhance the life expectancy while improving the quality of life, and to reduce health disparities due to gender, race and ethnicity, income and education, disabilities and other factors. Among the health problems in India, one of the most debilitating illness in musculoskeletal disorders. Movement would not be possible without the muscles of the skeletal system.

Musculoskeletal problems are the major burden on individuals, health system, and social care system with indirect cost being predominant. This burden has been recognized by WHO in endorsing the bone joint decade 2000-2010, among the chronic musculoskeletal diseases osteoarthritis (OA), rheumatoid arthritis and low back pain are the most important causes of disability in both developed and developing countries.

Osteoarthritis, or degenerative joint disease, is a chronic, slowly progressing disorder that causes deterioration of articulating cartilage. It affects weight – bearing joints (Hips & Knees) as well as joints of the distal interphalangeal and proximal interphalangeal joints of the fingers. Common symptoms include stiff joints, pain, warmth and inflammation and movement restriction.

Osteoarthritis of a knee is the most common type of arthritis and a major cause of chronic musculoskeletal pain and disturbance in the mobility of the elderly. Risk factors of osteoarthritis of the knee include old age, female, obesity, osteoporosis, occupation, sports activities, previous trauma, muscle weakness or dysfunction, proprioceptive deficit and genetic factors

(Bosom worth NJ, 2009)

Treatment for osteoarthritis aims to relieve pain, reduce disability and provide support to help the patient to live as active a life as possible. There are several options in treating Osteoarthritis both surgical and non surgical. Surgical treatment includes total joint replacement, Osteotomy arthrodesis and debridement. Non surgical treatment involves exercise, weight control, rest and relief from stress on joints, pain relief techniques, medication, complementary and alternative therapies.

(Ronald w, 2007)

Worldwide estimates indicate that 10% of men and 18% of women ≥ 60 years have symptomatic Osteoarthritis. Osteoarthritis is a major cause of impaired mobility. In 1990, Osteoarthritis was estimated to be the eighth leading non – fatal burden of disease, accounting for 2.8% of total years of living with disability. Osteoarthritis is the highest ranking disease and contributes to approximately 50% of the disease burden in the group.

(Saloni Tanna, 2004)

The exact incidence and prevalence of Osteoarthritis is difficult to determine because the clinical syndrome of Osteoarthritis (joint pains stiffness) does not always correspond with the structural changes of Osteoarthritis (usually defined as abnormal changes in the appearance of joints of radiograph). The exact cause for osteoarthritis is not known. Estimates suggest that up to 8.5 million people in the UK are affected by joint pain that may be attributed to Osteoarthritis (Arthritis care 2004). In adults 45 years old and over, the most common site of peripheral joint pain lasting for more than a week in the past month is in the knee (19%) and the highest prevalence of knee pain is among women aged 75 years and over (35%)

(Urmin et.al.,1998)

REFLEXOLOGY a widely used complementary therapy, may be effective in minimizing pain, during reflexology, a practitioner apply pressure to parts of the body, typically the feet or hands in the belief that this pressure will affect an organ or body part related to this area. The foot reflexology originates from China and it dates back to more than three thousand years ago. Some studies have shown that even in ancient Egypt people used foot massage for the prevention and treatment of various different health ailments. Reflexology was introduced in United States in 1913 by William H. Fitzgerald, M.D (1872-1942), ENT specialist.

1.1 NEED FOR STUDY:

Osteoarthritis is a slowly progressive non inflammatory disorder of the synovial joint. The global burden of Osteoarthritis is substantial; more than 50% of people over 65 years of age have radiological evidence of Osteoarthritis on effects as estimated 27 million Americans. The pain and disability associated with Osteoarthritis affect approximately 10% of men 18% of women over 60 years of age. Osteoarthritis is forecast to become the 4th leading cause of disability worldwide by the year 2020.

The prevalence of Osteoarthritis is high in India, ranging from 22% to 39% in different part of the country. Knee Osteoarthritis is common in women after the age of 45 years.

King (2010) estimated that arthritis affect more than 30% of people above the age of 65 years. The affected persons in the age group of 65 years and above are projected as nearly 21.4 million in 2001 and it is estimated that by the year 2030, about 41.4 million people would be affected by arthritis.

A recent WHO report on the world wide burden disease indicates that knee Osteoarthritis alone is likely to become the fourth most important cause of disability in women and the 8th in men. Knee Osteoarthritis is much more prevalent in India than in west and accounts as much more disability as any of other chronic conditions.

Arthritis foundation (2007) reported the prevalence rate of arthritis in the close relatives varies from 2% to 3%. Arthritis affects all people, irrespective of age, race and social status.

American college of Rheumatology (2007), stated that more arthritis patient visits physician and 2,50,000 of them had been hospitalized each year. The population at risk (≥ 65 years age) was 58.8%.

In India it is estimated that over 15 million people in the country suffer from knee Osteoarthritis, a condition where the cartilage that acts as a cushion between bones in joints, begins to wear out. The result of inflammation and joint pain majority reduce the mobility of the patients. The article published in Time of India "Osteoarthritis is India's No.1 ailment" has ranked Osteoarthritis as number one comparing with diabetes mellitus and hypertension.

(Sumitra Deb Roy, 2012)

A prospective study was conducted by Bukowsk. E.L.(2003), University of Punjab to determine the average age group for Osteoarthritis. In this study participants were 200 patients attending Orthopaedic OPD of the Punjab University health Centre. Demographic analysis of this study revealed that, out of 200 patients 84% of patients were in the age group of 40-70 years with the complaints of Knee joint pain.

Martin et.al., (2009) stated that arthritis is one of the most common inflammatory joint disease that require special care and a multidisciplinary team. The relief of symptom, preservation of joint function, prevention of joint damage and deformity, maintenance of an acceptable life style and patient education are the main goals of

nursing management and nurse plays a vital role within the multidisciplinary, ensuring the highest quality of life.

There are currently 580 million elderly aged 60 and over the world, in this 365 million live in the developing countries. Statistical data released by union ministry of health and family welfare's life expectancy in India gone up by 5 years 62.3 years for male, 63.9 years for female in 2001-2005 to 67.3 years and 69.6 years respectively in 2011-2015.

As the life expectancy increased in incidence of Chronic disease especially arthritis among 50% of the population chronic diseases or problems increased. The disease becomes more prevalence after the age of 45 years, approximately 6 million people are diagnosed and improperly self treated. The incidence of arthritis in woman is 3 times affected more than the men.

Reflexology is a complementary therapy that hinges on the belief that there are reflex areas in the feet and hands that correspond to the organs and glands of the body. Stimulating these areas correctly can create a positive effect in the corresponding part of the body.

Reflexology is a noninvasive, non pharmacological therapy; it can be applied as hand reflexology or foot reflexology or self foot reflexology.

Reflexology is the existing research into the effectiveness of reflexology in treating arthritis has concentrated on its ability to reduce pain and need of the Analgesics. Reflexology promotes better sleep, so the patient would not be as aware of the pain and also it improves the quality of life.

Through foot reflexology, by stimulating the reflex points 7000 nerves and 26 bones in the feet release blockage and rebalance energy flow in the body. This brings the body back into natural equilibrium, which promotes the body's natural healing power. This is because the body contains an energy field, as invisible life force. Complementary therapies are a new treatment option for the patients to improve their health status.

During the clinical experience the researcher has experienced in the Ortho department as the day to day the outpatient number of Osteoarthritis was increased and their inability to work the routine activity is affected, they need support of the family members. On researcher observation the Osteoarthritis patients are in the need of some other complimentary therapy. So Researcher have selected this topic for dissertation.

1.2 STATEMENT OF THE PROBLEM

A study to assess the effectiveness of reflexology on pain and activity of daily living of Osteoarthritis patients attending outpatient department in Dr.Kamatchi Memorial Hospital at Chennai.

OBJECTIVES

- To assess the pre test level of pain and Activity of Daily Living among Osteoarthritis patients between experimental and control group.
- To assess the post test level of pain and Activity of Daily Living among Osteoarthritis patients between the experimental and control group.
- To compare the effectiveness of reflexology on pain and Activity of Daily Living among Osteoarthritis patients between the experimental and control group.
- To find out the association of the level of pain and Activity of Daily Living with the selected demographic variables among experimental group.

1.4 OPERATIONAL DEFINITIONS

Assess

Statistical measurement of the difference between pre and post level of pain by doing Reflexology intervention by using the pain assessment scale.

Effectiveness

It refers to the extent to which the foot reflexology has achieved the desired effect among patient with Osteoarthritis. It is measured in terms of difference in pre-test and post-test score of pain scale and activity of daily living scale.

Reflexology

Reflexology is a complementary therapy that works on the principles that reflex areas in the feet and hands that correspond to the organs and glands of the body stimulating these areas correctly can create a positive effect in the corresponding part of the body. The methods used are the finger pop method, press and slide, rubbing, pinching and finishing used for 7 days 15 minutes daily for each samples.

Pain

Pain in defined as an unpleasant, subjective and emotional experience associated with actual or potential tissue damage.

Activity of Daily Living

Activity of daily living (ADL) is defined as the things we do normally such as feeding our selves, bathing, dressing, grooming, works, homemaking and leisure.

Osteoarthritis Patients

The patients diagnosed as Osteoarthritis.

1.5 HYPOTHESIS

"There is a significant difference in pre test and post test score of pain and activity of daily living among Osteoarthritis patients

1.6 DELIMITATIONS

- Patient with Osteoarthritis.
- Patient will be assessed by pain scale and activity of daily living scale.
- The study sample size will be delimited to 60 Osteoarthritis patients.

1.7 PROJECTED OUTCOME

- The study will help to identify the influence of demographic variables on level of pain.
- The findings of the study will help us to make recommendations to health care professionals on reflexology on reducing joint pain among patients with Osteoarthritis.

CHAPTER – II

REVIEW OF THE LITERATURE

The literature review refers to the activities involved in searching for information on topic and developing a comprehensive picture of the state of knowledge on that topic.

Review of literature involves an extensive and systematic examination of publications relevant to the research project. It helps to gain insight and to be familiar with the existing studies, provides basis for the future investigation, develop the methodology, tools and research design.

Review of literature is organized under the following headings.

2.1 Literature related to Osteoarthritis:

2.2 Literature related to pain of Osteoarthritis patients.

2.3 Literature related to managements for Osteoarthritis

2.4 Literature related to effectiveness of reflexology on Osteoarthritis

2.1 Literature related to Osteoarthritis:

Nepple JJ et al, (2015), studied that a utility of biomarkers for assessing the pathophysiology of Osteoarthritis of hip though a systematic review. The biomarker of Osteoarthritis is type II collagen telopeptide, serum cartilage oligomeric protein & serum C – reactive protein. Study concluded that biomarkers were utilized for diagnosis, disease staging, prognosis & pre arthritic stage of osteoarthritis.

Mobasheri A et al, (2015), conducted study on chondrosenescence a hall mark and potential role in the pathogenesis of osteoarthritis. Chondrosenescensce - Cartilage aging. Findings of this study obtained from the review of published literatures. Chondrosenescensce is to define the age – dependent deterioration of chondrocyte function and how it changes the function of cartilage in osteoarthritis. Study revealed that chondrosenescensce is modified by drugs, weight loss, improved nutrition and physical exercise could lead to the development of new therapeutic and preventive strategies for Osteoarthritis and a range of other age-related inflammatory joint diseases.

Sarah Ehsan et al, (2014), conducted an observational study among 50 females between the age of 45 and 65 years to assess whether obesity, family history and menopause to explain the trend in knee paid and osteoarthritis in females at the department of orthopedics. Results showed that out of 50 females 96% of the obese females developed symptomatic osteoarthritis of knee.

Elboim – Gabyzon et al, (2013), performed a true experimental study among 63 subjects with symptomatic knee pain to determine gender – related differences in pain intensity and functional ability among subjects with knee Osteoarthritis. Study concluded that particularly female subjects influenced by psychological aspects associated with chronic pain.

Muhammad N. Iqbal et al, (2013), has done a cross sectional study among 100 patients of age more than 18 years, and either gender to determine the frequency of factors associated with knee Osteoarthritis in the department of medicine at Liaquat National Hospital. Karachi. The main variables of the study were factors associated with Osteoarthritis which included obesity, age, gender, smoking and anemia. The study found that females of age greater than 55 years mostly noted to visit a Tertiary care hospital due to knee Osteoarthritis.

Salve H et al., (2012), studied a community based cross – sectional study among 260 woman to study the prevalence of knee Osteoarthritis in women aged ≥ 40 years and treatment seeking behavior of women suffering from Osteoarthritis in an urban resettlement colony in South Delhi. Study concluded that Prevalence of Osteoarthritis found to be increased with age. Less than half of those with Osteoarthritis underwent treatment even though there is high prevalence of Osteoarthritis. Study recommend that there is need to spread awareness about the disease, its prevention, and rehabilitation in the community.

Blagojevicy M. et al, (2012), has done a study to determine the current evidence on risk factors for knee Osteoarthritis. A systematic literature search was carried out for cohort and case control studies evaluating the association of demographic, co-morbid and other patient. Which determines factors with onset of knee Osteoarthritis. A scoring tool was developed to assess the quality of studies. The study concluded that the factors consistently associated with knee osteoarthritis were obesity, previous knee trauma, hand osteoarthritis, female gender and older age, smoking.

Okanlawon F.A. (2011), conducted a non – experimental descriptive study among 209 males and 277 females aged 45-85 years diagnosed with Osteoarthritis to examine the incidence, age and gender distribution of Osteoarthritis of the knee joint, lumbar and cervical spine at the University of Ibadan Health Centre. Data was analyzed using the chi-square test to determine the relationship between gender, age and occurrence of Osteoarthritis.

The result showed that the incidence of Osteoarthritis in the lumbar spine was the highest – 175 (36%), followed by the cervical spine – 159 (32.7%) and knee joint – 152 (31.3%). There was a significant difference in the distribution of Osteoarthritis between gender the within the age groups (P=0.000)

Grotle et. al., (2011), conducted a Norwegian study on musculoskeletal pain among 1854 people aged between 24 – 76 years to investigate the impact of obesity on incident of Osteoarthritis of hip, knee and hand. The osteoarthritis patients were studied under follow up based on self-report. Obesity was defined by a body mass index (BMI) of 30 and above. Study identified that 10 years follow up the incident rates were 5.8% for hip Osteoarthritis, 7.3% for knee Osteoarthritis and 5.6% for hand Osteoarthritis. Increasing age, female gender, work status and leisure time activities, a high body mass index (>30) was significantly associated with knee Osteoarthritis.

2.2 Literature related to pain of Osteoarthritis patients.

Duygu Cubukeu et al., (2012), has done a cross sectional study among 114 patients with knee Osteoarthritis to investigate the relationships between pain, disability, and radiographic finding in patients with knee Osteoarthritis at physical medicine and rehabilitation outpatient clinic Turkey. Age, duration of disease, and body mass index (BMI) of patients were recorded. The severity of knee pain, stiffness, and disability were measured using the Western Ontario and Mc master Universities Osteoarthritis index (WOMAC). They concluded that knee pain, stiffness, and duration of disease may affect the level of disability in the patients with knee Osteoarthritis.

Qian Wang et al, (2012), has studied a longitudinal study among 176 older adults with Osteoarthritis to examine the relationships between pain, functional disability and depression to test the activity restriction model in China. Study concluded that disability was a mediator for the relationship between pain and depression. In both cross – sectional and longitudinal analyses, the authors found that disability is a mediator for using commonly accepted methodologies. The study significant to P<0.001.

Sanghi et al, (2011), conducted a cross sectional study among 180 patients with knee Osteoarthritis who were enrolled as per the American college of Rheumatology (ACR) guidelines in India. Visual analog scale for knee pain and Western Ontario Mac University (WOMAC) index specifically to assess the pain, stiffness and disability were recorded. Study identified that the functional disability was associated with medial joint – space narrowing, tibiofemoral alignment, loose bodies, and juxta – articular Osteopenia.

Kathryn Smith (2011), conducted a cross sectional study of 71 (58 women and 13 men, Maximum age group = 63 years) knee Osteoarthritis patients classified as overweight, to examine differences, in self – reported pain symptoms and physical function among weight, obese, and morbidly obese older adults with knee Osteoarthritis (n=21), Obese (n=36) or morbidly obese (n=14) completed assessment of the western Ontario and MC master Universities (WOMAC) Osteoarthritis scale. Study findings suggested that pain and risk for physical disability increases as the weight increases in older knee Osteoarthritis patients.

Figueiredo Neto Em et al, (2011), conducted a cross sectional study among 100 patients to evaluate the quality of life and its association with daily physical activity in different context, of life in Osteoarthritis patients referred from basic health care units to a University – affiliated service. Result revealed that there was an association between physical activity and quality of life assessed by WOMAC and the more severe the pain, the worse of quality of life. Study reveals that most patients in this population, the physical aspects of the quality of life are worse, but they maintain their daily physical activities.

Mariaizal et al, (2010), conducted a study in a sample of 104 older people with Osteoarthritis, to assess the level of agreement between radiographic damage and functional disability in older people with Osteoarthritis in Spain. Second, to assess the role of coping skills and sensory pain parameters as sources of disagreement between these variables. The results reveals relationship between radiographic damage and functional disability, modified by the levels of the two variables.

Tuhina Neogi et al, (2009) conducted a case control study among 696 people from multicenter Osteoarthritis and 336 people from Framingham to examine the relation of radiographic features of Osteoarthritis with knee pain. This study found that radiographic features of degeneration in Osteoarthritis were strongly associated with knee pain.

Sergisastre et al (2008) conducted cross – sectional descriptive study of 100 patients suffering from arthritis to assess pain, functional capacity and joint damage in patients diagnosed with knee Osteoarthritis, as well as the possible repercussions for subsequent surgical treatment at New Delhi. Socio, demographic, clinical and radiological data were collected and then pain and functional capacity were evaluated by using the western Ontario and MC Master Universities Osteoarthritis index.

About 80% of the patients were obese, suffered from co-morbid conditions and some presented with psychopathology.

Gabriella M. Van Dijk et al, conducted a course of functional status and pain in Osteoarthritis of the hip and knee. A limited evidences was established from systematic search for 6500 titles and abstracts were screened & 48 publications were considered for inclusions. In conclusion the greater muscle strength, better mental health, self efficacy, social support and more aerobic exercise were protective factors in osteoarthritis.

2.3 Literature related to management for Osteoarthritis Patients:

Tanaka R et al, (2015) studied the effects of Exercise therapy on walking ability in individuals with knee Osteoarthritis: A systematic review and meta – analysis of randomized controlled trial were used. The study done to assess for 6 minute in walking and the amount of time spent for walking and gait velocity were obtained and analyzed. The study found that the exercise therapy has improved the amount of time spending for walking, gait velocity.

Lai Lp et al, (2015) performed a study for the use of platelet Rich Plasma(PRP) in Intra – Articular knee injections for Osteoarthritis. Study done by a prospective observational studies including only PRP treatment. Study found that PRP intra-articular injections of the knee was an effective alternative treatment for knee Osteoarthritis in reducing joint pain.

Davis AJ. et. al (2013) conducted a study on biphosphonates effectiveness in the treatment of Osteoarthritis pain. Study done by a meta – analysis and systematic review. Searches found 13/297 eligible studies, which includes the total of 3832 participants. Study reported that biphosphonates (Analgesic drug) improve pain of (61.5%) assessed by VAS score and (38.5%) improvement in WOMAC pain scores compared to control groups.

Hinman RS et al, (2013), Performed a study on aquatic physical therapy for hip and knee Osteoarthrits through a randomized controlled trials. Sample size is 71 volunteers with symptomatic hip and knee Osteoarthirits participated. Study found that the total of 72% and 75% of participants reported improvements in pain and function respectively, compared with only 17% (each) of control group participants. Study significant to $p< 0.05$.

Fransen M et al, (2010), conducted a land – based exercise reduce pain and disability associated with hip Osteoarthritis. Study done by the meta – analysis of Randomized controlled trials. Study evidence shows the benefit of land – based therapeutic exercise for the symptomatic hip Osteoarthritis in terms of reduced pain and improved physical function.

Steven Simoens et al, (2010), conducted a study on pharmaco therapeutic aspects of treating knee Osteoarthritis with glucosamine sulfate. It is a natural constituent of cartilage and is used in the treatment of knee Osteoarthritis. Findings of this study obtained from previous published literatures once daily dosage of 1,500mg of glucosamine sulfate is likely to be safe, effective in reducing pain and cost – effective treatment of knee Osteoarthritis as compared to placebo.

2.4 Literature related to effectiveness of Reflexology on Osteoarthritis:

Zhang y et al, (2015), was done a study on reflexology combined with core stability exercises for nonspecific low back pain through a randomized controlled trial. Sample size were 92. There was a core stability exercises can improve the therapeutic effect of reflexology in treating non specific low back pain.

Borges TP et al, (2014), conducted a study on occupational low back pain in nursing workers: massage and pain through a randomized controlled trial. 45 subject were randomly selected. The main triggering factor that worsens pain, by the patient manipulation. The prevalence rate of 34.9% shows better result after 12 sessions. Study found that massage shows an enormous effect (d=4.59), corresponding to 86% of reduction in the pain level.

Taru Manyanga et al, (2014), conducted study on pain management with acupuncture in Osteoarthritis. Through a systematic review and meta – analysis that acupuncture use was associated with significant reduction in pain intensity, improvement in functional mobility and health related quality of life. Sub group analysis of pain intensity by intervention duration suggested greater pain intensity reduction with intervention periods greater than 4 weeks.

Chung Soon Kim et al, (2014), has done a study on effects of foot reflexology on Arthralgia, Ankylosis, Depression, and sleep in community – dwelling with Osteoarthritis. Research design used was experimental research design. Participants were 47 elderly experimental group and 25 in the control group. The result of the study indicated that foot reflexology is an effective nursing intervention in reducing pain and improving the quality of sleep. Significant to $P<0.001$.

Kim, In Sook et al, (2013), Studied the effects of Aroma Foot Reflexology massage on mood states and Brain waves in women elderly with Osteoarthritis through a nonequivalent control group non synchronized design. Sample size of the study 62 elderly women with Osteoarthritis. The intervention was conducted there times a week for two weeks. The study result revealed that Aroma foot reflexology massage can be utilized as an effective intervention to decrease depression of mood states, increase of α, and β brain wave on woman elderly with Osteoarthritis.

Perlman Al et al (2012), was done a study on reflexology therapy for Osteoarthritis of the knee through a randomized dose – finding trial, sample size is 125 adult with Osteoarthritis of knee. Study found that about 30 or 60 minutes weekly or biweekly reflexology groups has significantly improved in the pain level compared to usual care at the primary end point of 8 weeks.

Nadia Mohamed Taha et al (2011), conducted a study on effect of Reflexology on pain and quality of life in a patient with arthritis through a Quasi experimental research design. Sample size of the study was 39 females using an 8 week course of reflexology treatment were given to the patients. The study results revealed that, improvements in patients quality of life, pain and health status at the post – intervention phase and at the follow up phase.

2.5 Conceptual framework:

Conceptual frame works are inter-related concepts that assembled together in some rational scheme by virtue of their relevance to a common theme. Conceptual framework helps to stimulate research and the extension of knowledge by providing both direction and inputs.

(Polit and Hungler, 1999)

The present study is focused on the effectiveness of Foot reflexology on pain and activity of daily living of Osteoarthritis patients. The study is based upon J.W. Kenny's Open system model. The system's theory is concerned with changes due to interrelation between various factors in a situation. All living systems are open, in which there is a continual exchange of matter, energy and information. Open system have varying degrees of input and gives back output in form of matter, energy and information.

The concepts of Kenny's open system model are input, throughput, output and feedback. Input refers to matters and information, which are continuously processed through the system and released as outputs. After processing the input, the system

returns output (matter and information) to the environment in as altered state, affecting the environment for information to guide its operation. This feedback information of environment responses to the systems output is used by the system in adjustment correlation with the environment. Feedback may be possible, negative or neutral. In this study the concepts have been modified as follows:

INPUT:

Accordingly to J.W. Kenny's input can be matter, energy and information from the environment from the environment. In the present study the input refers to the assessment of pain and activity of daily living of Osteoarthritis patients in experimental and control group.

THROUGHPUT:

Throughput was the implementation of reflexology by using finger pop, rubbing, pinching for 7 days daily for the duration of 15 minutes.

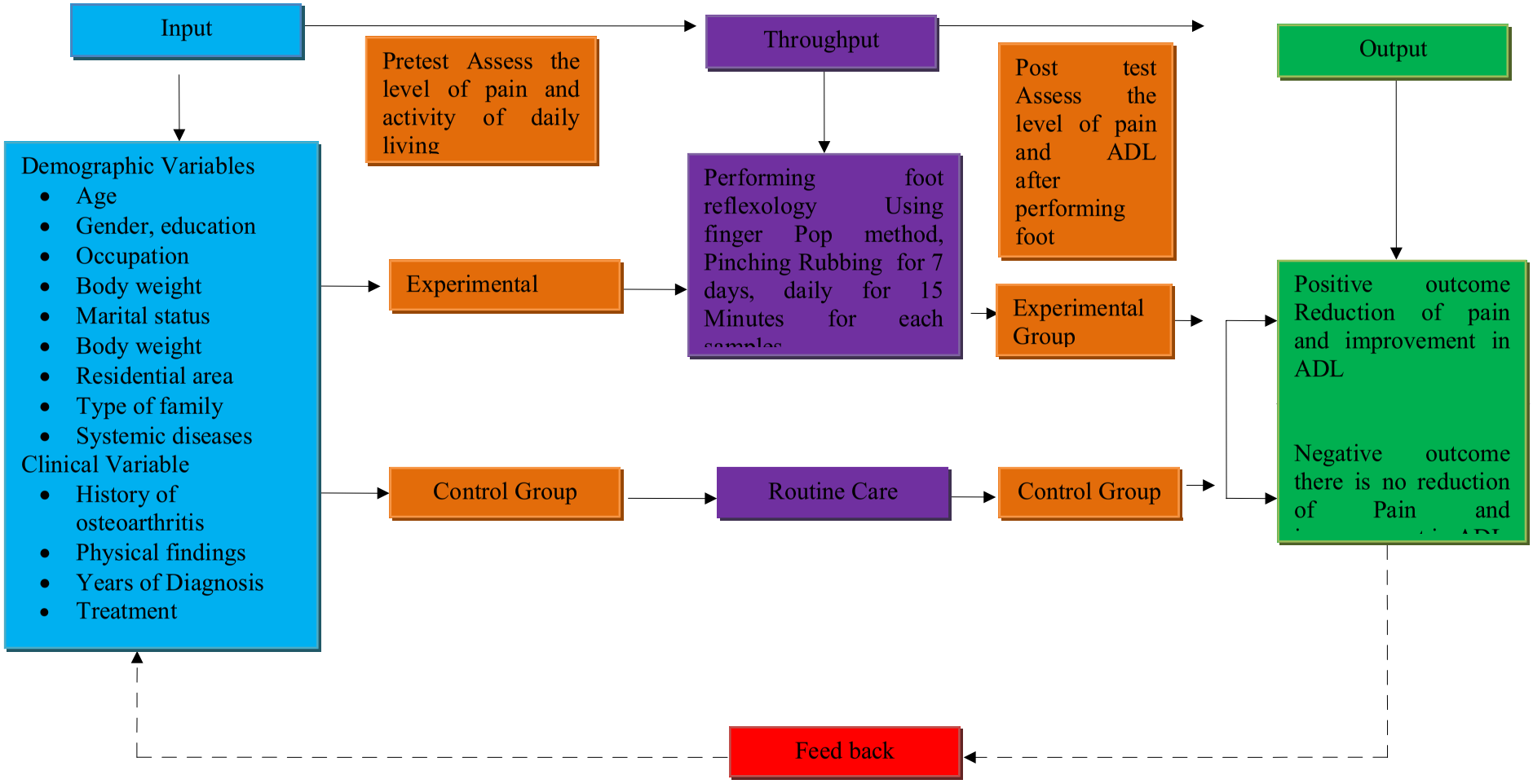
OUTPUT:

The expected outcome was obtained by assessing the level of pain and activity of daily living through verbal descriptive scale and activity of daily living scale. The output was considered in terms of change in post test level of pain and activity of daily living obtained through verbal descriptive scale and activity of daily living scale.

FEEDBACK:

Differences in pretest and post – test score were observed from the level of pain and activity of daily living score of the sample. In the present study, the feedback considered as a process of maintaining the effectiveness of foot reflexology. Feedback was based on the analysis of post test scores the intervention strategy can be modified if necessary and the same pattern can be followed once again.

Figure: 1 Conceptual framework based on modified J.W. Kenny's Open system



CHAPTER – III

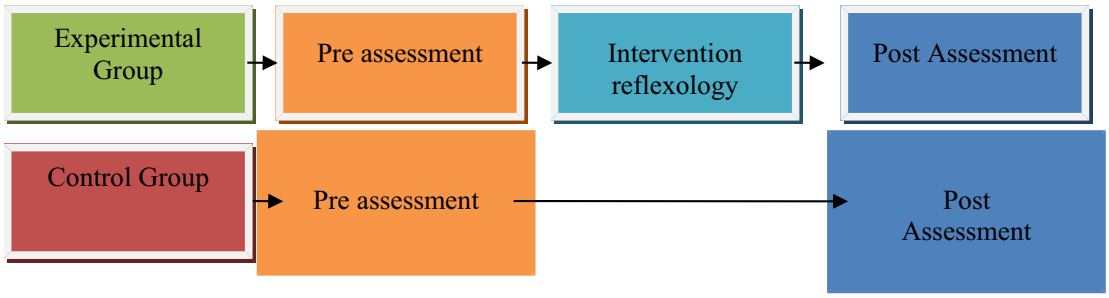
RESEARCH METHODOLOGY

The study is to assess the effectiveness of reflexology on pain and activity of daily living of osteoarthritis patients in selected hospital at Chennai.

Research methodology includes the Research Design, variables, setting, population, sample and sample Technique. It involves preparation of data Collection tools, scoring procedures, content validity, pilot study, Reliability and procedure for data collection and plan for statistical analysis.

3.1 RESEARCH DESIGN

The Research design used in this study is pre test post test control group design. The research design is comparison of the variation before and after the intervention of reflexology.



Symbolic representation of a pretest, posttest (before – after) experimental design.

RE 01 X O2

RC 01 - O2

RE: Random Assignment of subjects into Experimental group.

RC: Random Assignment of subjects into control group.

O1: Pretest observation & measurement.

X: Intervention

O2: Post test observation & measurement.

3.2 VARIABLES OF THE STUDY

Independent variable:

Independent variable of the study is reflexology – Stimulating the nerve and giving pressure points of experimental group of osteoarthritis patients.

Dependent variable:

Dependent variables of the study were osteoarthritis pain and decreased activity of daily living of Osteoarthritis patients.

3.3 SETTING OF THE STUDY

The setting of the study was Dr. Kamakshi Memorial Hospital at Pallikaranai. It is a multispeciality hospital with 290 beds. In the orthopedic department per day out patients census was 50 – 60. In this approximately 5 – 10 patients were Osteoarthritis patients.

The study was conducted among osteoarthritis patients attending out patients department, both male and female patients were selected as sample.

3.4 POPULATION:

The study population includes all the patients with Osteoarthritis attending the orthopedic outpatient department of Dr.Kamakshi Memorial Hospital at Pallikaranai, Chennai.

3.5 SAMPLE

Sample refers to the process of selecting a patients diagnose as Osteoarthritis both male and female.

3.6. SAMPLING TECHNIQUE

The samples were selected by random sampling method.

3.7 SAMPLE SIZE:

The study sample comprises of 60 subjects in which 30 subjects are experimental group and 30 subjects are control group who fulfilled the inclusion criteria.

3.8 CRITERIA FOR SELECTION OF SAMPLES:

Inclusion Criteria

1. Patients with Osteoarthritis attending outpatient department.
2. Patients willing to participate in the study.
3. Patients able to understand Tamil & English.

Exclusion Criteria

1. Patients those who are not willing.
2. Patients with other orthopaedic problems.

SELECTION OF RESEARCH INSTRUMENT:

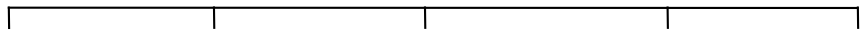
Instrument used in this study verbal descriptive scale to assess the level of pain among Osteoarthritis patients.

3.9.1 DESCRIPTION OF THE TOOL

The tools consists of

PART A: Demographic data and clinical variable

PART B: Verbal descriptive scale



No pain mild pain Moderate pain Severe pain Unbearable pain

No Pain: Pain free

Mild Pain: Nagging, Annoying, but does not interfere with daily living activity.

Moderate Pain: Interfere significant with daily living activity.

Severe pain: Disabling, unable to perform daily activity.

Unbearable Pain: Un tolerable pain.

PART C: Modified health assessment questionnaire (Activity of Daily Living Scale)

Key for scoring procedure

Low Activity = ≤ 50%

Moderate Activity = 50 – 74%

High Activity = ≥ = 75%

3.9.2 TESTING OF TOOL

Content validity

The content validity was obtained from the medical experts and expert professors of Medical surgical nursing department of various colleges. Experts suggestions were incorporated in the tool.

Reliability:

The reliability was established using split half method the value of r = 0.83.

3.10 PILOT STUDY

The pilot study is a trial run for the main study to test the reliability, practicability and feasibility of the study. A formal permission was obtained from the department of Orthopedic Medicine, Dr. Kamakshi Memorial Hospital, Chennai.

The pilot study was conducted in the orthopedic medicine outpatient department for the period of 10 days from 20.04.15 to 30.04.15. Ten Patients were selected by simple random sampling method, five patients were in experimental group and five patients were in control group. Analysis of the findings showed the experimental group, the pre assessment pain score according to verbal descriptive pain scale 3 unbearable pain

and 2 severe pain and pre assessment of activity of daily living scale score in percentage is from 55% - 64%.

In the post assessment of the same experimental group pain score is 3 mild pains and 2 moderate pains and post assessment of activity of daily living scale – score in percentage is 86% to 93%.

Analysis of findings showed the control group, the pre assessment pain score according to verbal descriptive pain scale 1 moderate, 3 severe and 1 unbearable pain and pre assessment of activity of daily living scale score in percentage is 43% - 63%/

In the post test assessment of same control group pain score was 1 mild pain and 4 severe pains and post assessment of activity of daily living scale score in percentage 55% - 73%.

The reliability was established using split half method the value of r = 0.83.

It shows high consistency and the feasibility of the study and after which the plan of main study was conducted.

3.11 PROCEDURE FOR DATA COLLECTION

Formal written permission was obtained from the medical superintendent of Dr. Kamakshi Memorial Hospital, Chennai and also the Department of the orthopedic medicine department in Dr. Kamakshi Memorial Hospital, Chennai. The data collection was done for a period of 4 weeks from 01.05.15 to 31.05.15 each day.

The data collection was done by the investigator after the brief introduction, and rapport was established consent was obtained from the patients based on pre assessment, followed by reflexology and post assessment was done.

PHASE – I : PRE ASSESSMENT:

The researcher introduced her to the samples. Established rapport by explaining the purpose of the study. Informed consent was obtained and confidentiality was maintained. In pre assessment demographic & clinical variable, pain assessment and activity of daily living assessment was done for both experimental and control group.

The researcher spends 15 minutes to each patient for pre assessment. Reflexology done by the researcher 15 minutes for each patient using finger Pop, pinching & Rubbing.

Insisted the patients to come for continuously seven days for the reflexology & the post test done on the seventh day after the intervention. No intervention for the control group.

PHASE – II: POST ASSESSMENT

The researcher conducted the post assessment pain scale and activity of daily living scale for both experimental and control group after 7 days of pre assessment.

3.12 PLANS FOR DATA ANALYSIS:

The analysis of data was done by following methods.

Demographic variables were given in frequencies with their percentages.

Pretest pain and activity of daily living were analyzed using frequencies and percentage for experimental and control group. Post test pain and activity of daily living were analyzed frequencies and percentage for experimental and control group.

Experimental and control group effectiveness of reflexology was analyzed using student paired t-test.

Association between demographic variables and experimental group were analyzed using pearson chisquare test.

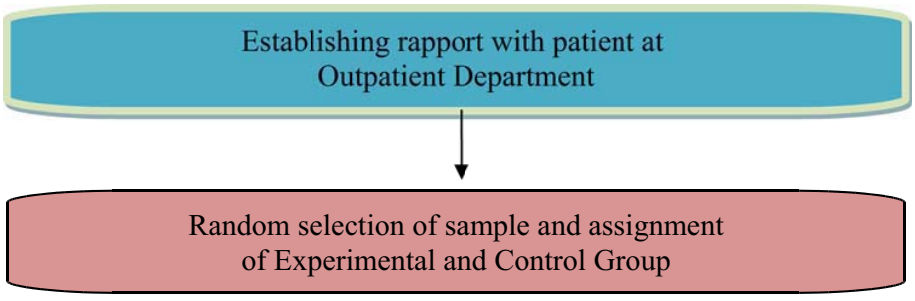
Multiple bar diagram, pie diagram were used to represent the data.

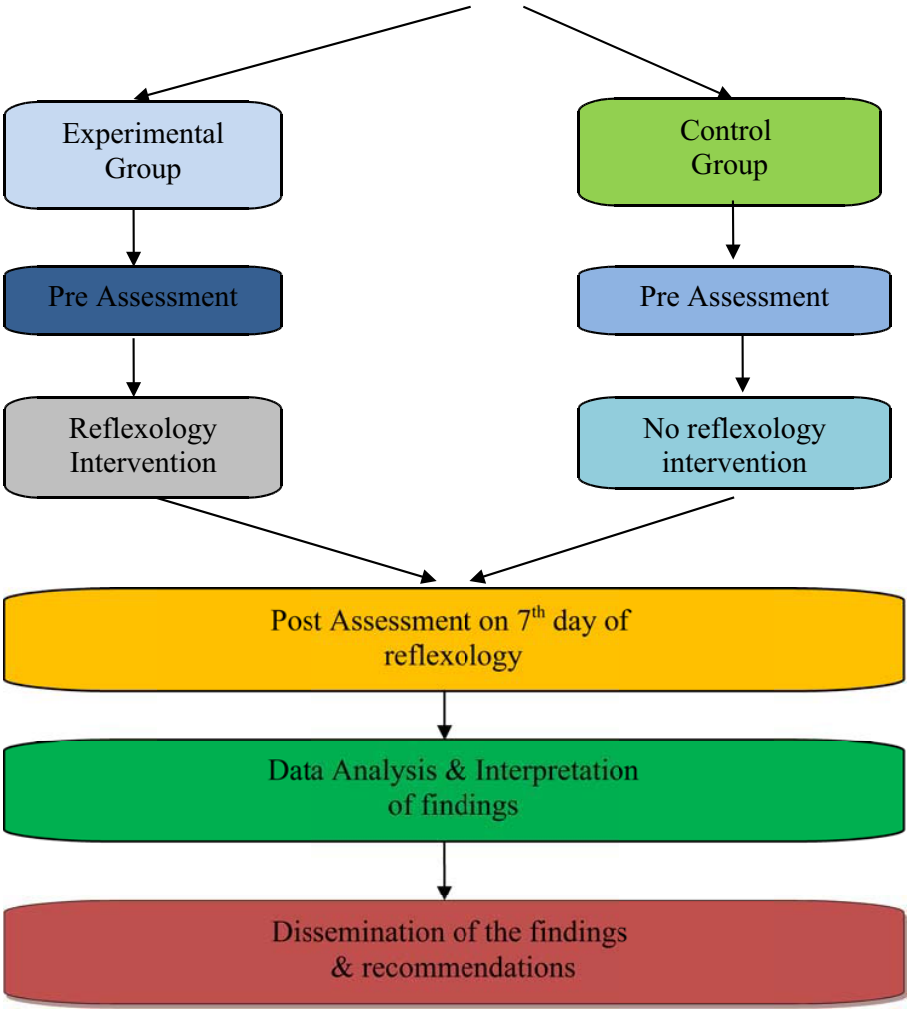
$P < 0.001$ was considered statistically significant.

3.13 ETHEICAL CONSIDERATION:

The Research proposal was approved by the experts, prior to the pilot study and permission for the main study was obtained from the Head of the department, Department of Medical Surgical Nursing, Padmasree College of Nursing, Walajabad, Kanchipuram – 631 605. Permission was also obtained from the Orthopedic Medicine department of Dr. Kamakshi Memorial Hospital, Chennai. Ethical Committee of Padmasree College of Nursing issued the ethical clearance certificate.

SCHEMATIC REPRESENTATION OF THE STUDY




Experimental Group
Control Group
Pre Assessment
Pre Assessment
Reflexology Intervention
No reflexology intervention
Post Assessment on 7th day of reflexology
Data Analysis & Interpretation of findings
Dissemination of the findings & recommendations

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected from 60 Osteoarthritis patients to assess the effectiveness of Foot reflexology to reduce pain and improve the activity of daily living at Dr. Kamakshi memorial Hospital, Pallikaranai, Chennai.

ORGANIZATION OF THE DATA:

Section – I: Description of demographic profile of experimental and control group.

Section – II: Pre and post assessment of pain and activity of daily living of Osteoarthritis patients of experimental and control group.

Section – III: Effectiveness of reflexology in experimental and control group.

Section – IV: Association of the level of pain with the selected demographic variables in experimental group.

Section V: Association of the activity of daily living of the selected demographic variables in the experimental group.

SECTION – I

Table 1: Demographic profile of experimental and control group:

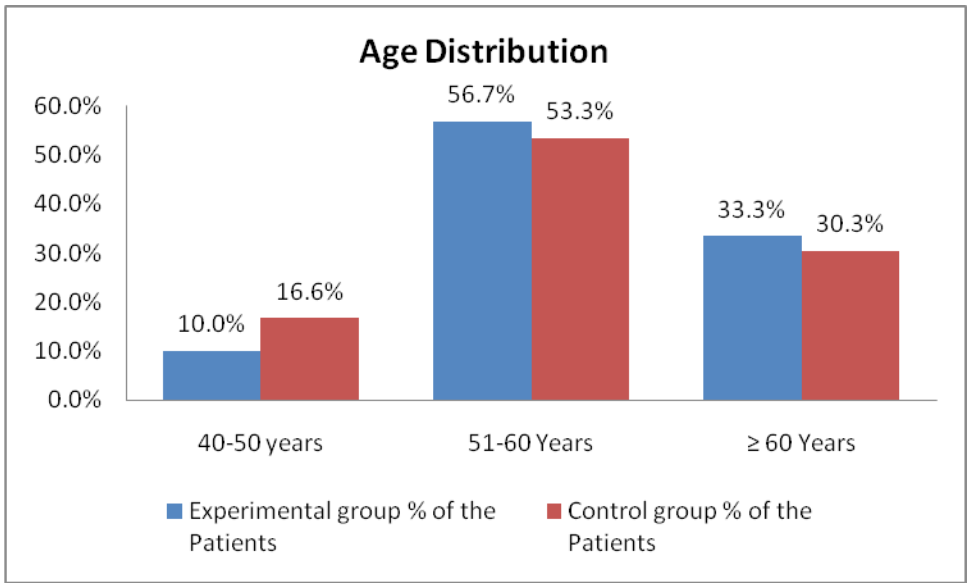
S. No.	Demographic variables	Experimental Group		Control Group	
		Percentage	No	Percentage	
1.	**Age in years**				
	a) 40-60 yrs	3	10	5	16.7
	b) 51-60 yrs	17	56.7	16	53.3
	c) ≥ 60 yrs	10	33.3	9	30.0
2.	**Gender**				
	a) Male	11	36.7	9	30
	b) Female	19	63.3	21	70
3.	**Educational Status**				
	a) illiterate	-	-	-	-
	b) Primary School	-	-	2	6.7
	c) Middle School	8	26.7	9	30.0
	d) High School	17	56.7	16	53.3
	e) Graduate	5	16.6	3	10.0
4.	**Occupation**				
	a) Sedentary work	4	13.3	4	13.3
	b) Moderate work	23	76.7	19	63.3
	c) Heavy work	3	10.0	7	23.4
	d) Unemployed	-	-	-	-
5.	**Marital Status**				
	a) Single	-	-	-	-
	b) Married	22	73.3	28	93.3
	c) Widower / Widow	8	26.7	2	6.7
6.	**Body weight in Kilogram**				
	a) Less than 49 Kg	15	50	6	20.0
	b) 50 – 70 Kg	9	30	16	53.3
	c) 71 – 90 KG	6	20	8	26.7
7.	**Residential area**				
	a) Rural	2	6.7	2	6.7
	b) Urban	28	93.3	28	93.3
8.	**Type of Family**				
	a) Joint family	27	90	19	63.3
	b) Nuclear family	3	10	11	36.7
9.	**Systemic diseases**				
	a) Yes	7	23.3	13	43.3
	b) No	23	76.7	17	56.7
S. No.	**Demographic variables**	**Experimental Group**		**Control Group**	
		No	**Percentage**	**No**	**Percentage**

10.	**Clinical variables**				
	History of Osteoarthritis				
	a) family history of Osteoarthritis	1	3.3	-	-
	b) History of joint pain	14	46.7	17	56.7
	c) Medical history	15	50.0	13	43.3
11.	**Physical findings**				
	a) Joint swelling	1	3.3	-	-
	b) Joint tenderness	19	63.3	19	63.3
	c) Decreased range of motion in joints	10	33.4	11	36.7
12.	**Number of Years After diagnosis as Osteoarthritis**				
	a) Less than 1 Yr	6	20	9	30
	b) 1-3 Yrs	24	80	9	30
	c) More than 3 yrs.	-	-	12	40
13.	**Use of any kind of pain medication**				
	a) Oral	7	23.4	15	50.0
	b) Topical	22	73.3	11	36.7
	c) No.	1	3.3	4	13.3

Table No.1 Shows the description of Demographic variables of the experimental and control group. 51-60 years age group 56.7% and 53.3%, female 63.3% and 70%, high school 56.6% and 53.3%, < 49kg 50% and 50-70 kg 53.3%, No systemic diseases 76.7% and 56.7%, joint tenderness 63.3% and 63.3%, 1-3 year after diagnosis 80% and > 3 years 40%, topical use of pain medication 73.3% and oral use of pain medication 50% respectively.

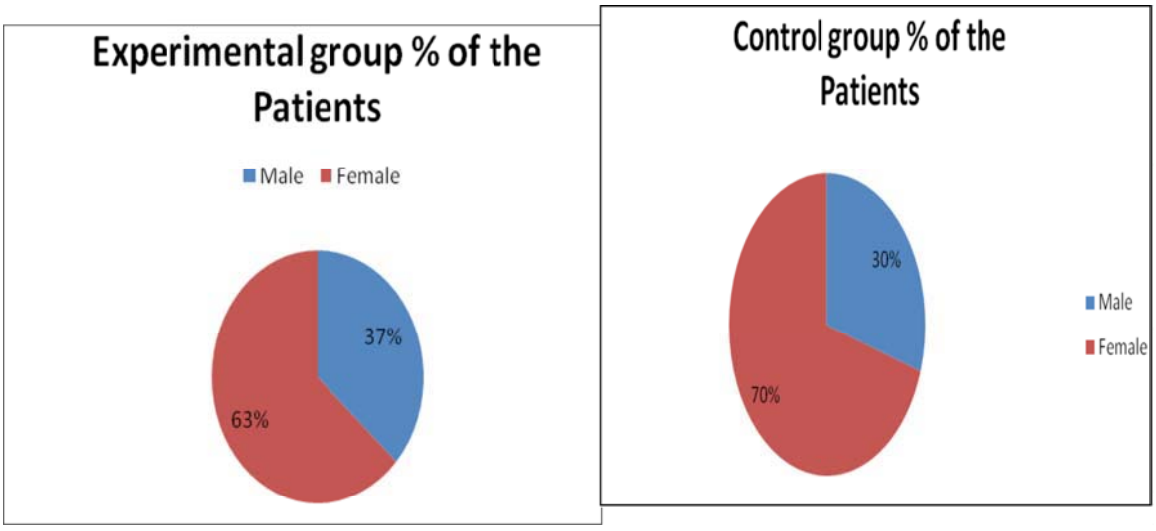
Section - I

Figure – 1: Distribution of age among experimental and control group



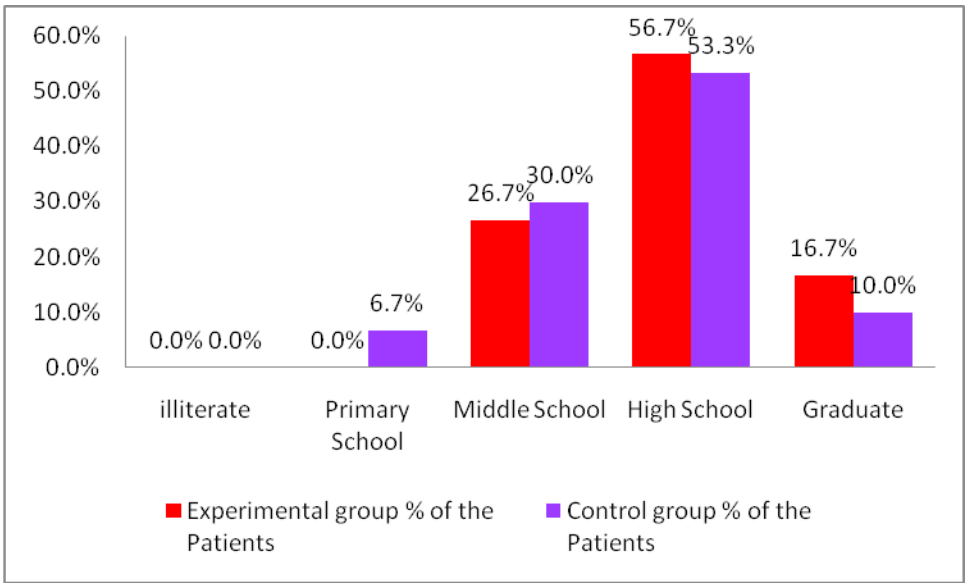
Gender Distribution

Figure-2: General Distribution of the Experimental and Control Group.



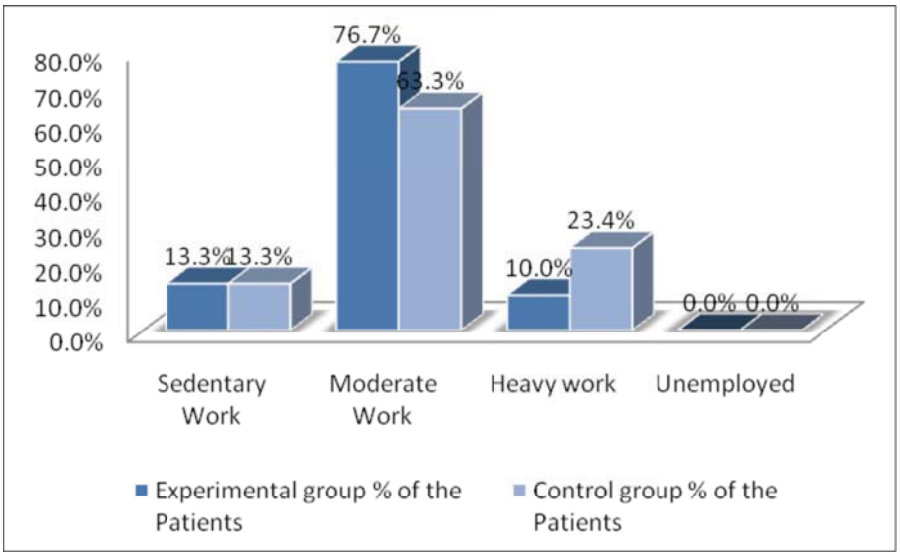
Educational Status

Figure-3: Educational status of the Experimental and Control Group



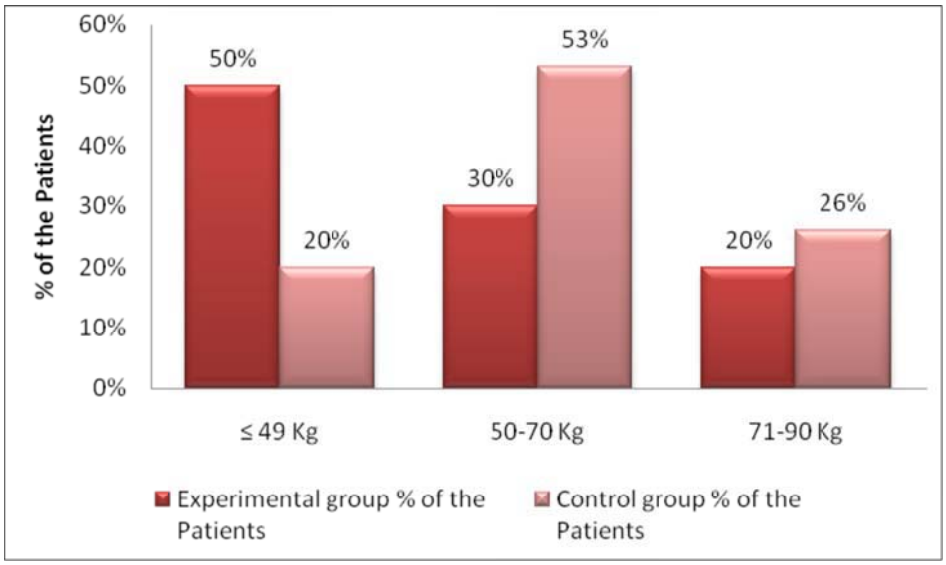
Occupation

Figure-4: Occupation of the experimental group and Control Group.



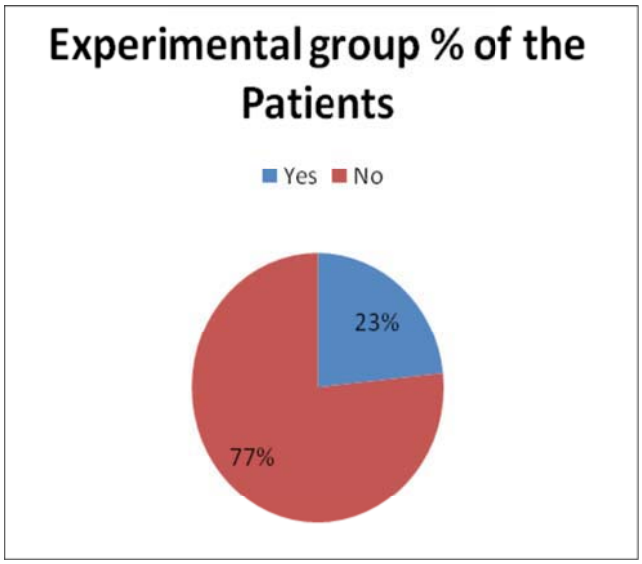
Body weight

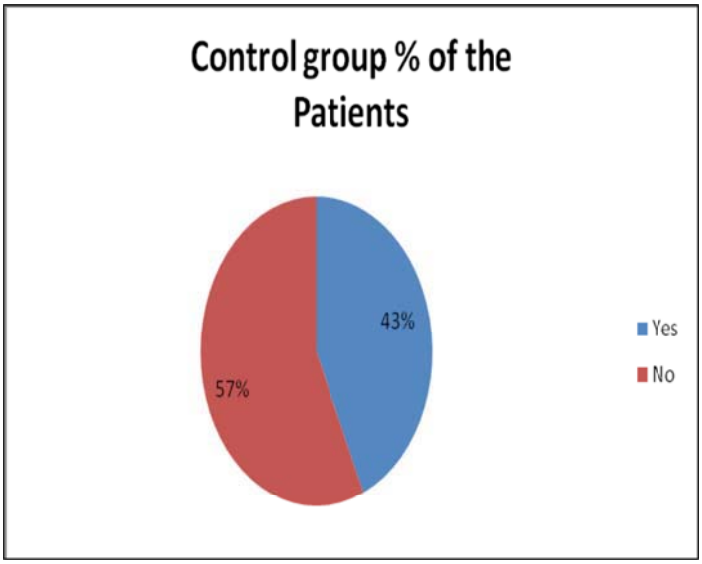
Figure-5: Body weight of the Experimental and Control Group.



Systemic Diseases Figure-6:

Distribution of the systemic disease among experimental and control group.





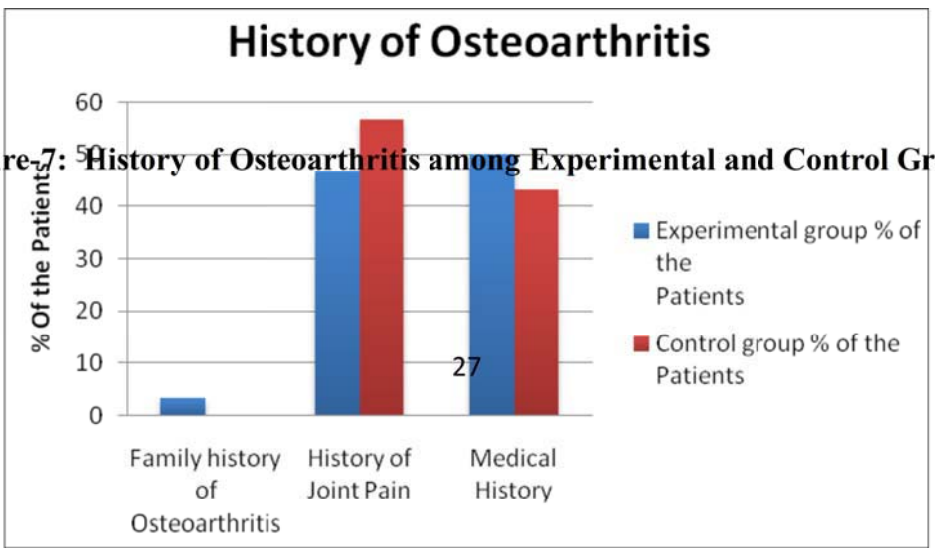
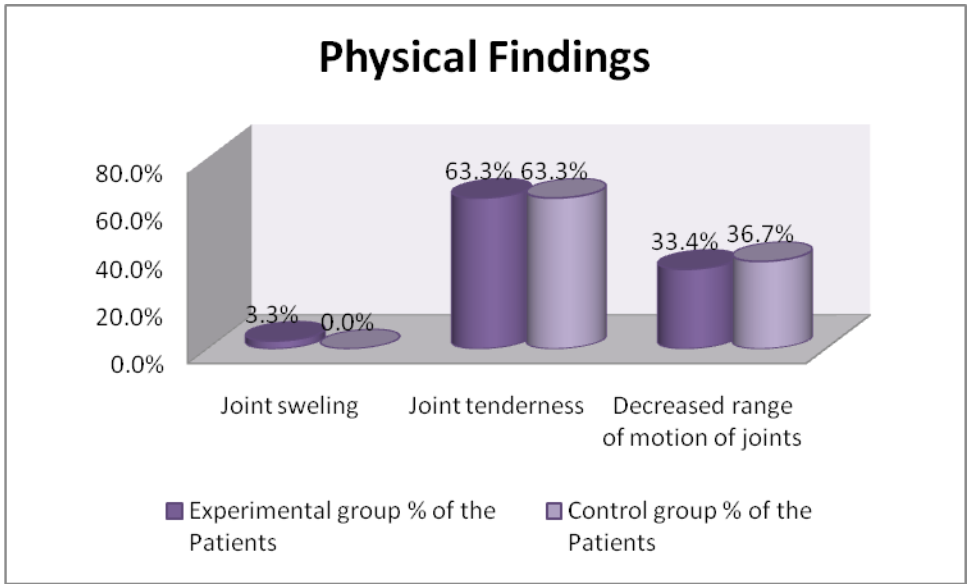


Figure-7: History of Osteoarthritis among Experimental and Control Group.

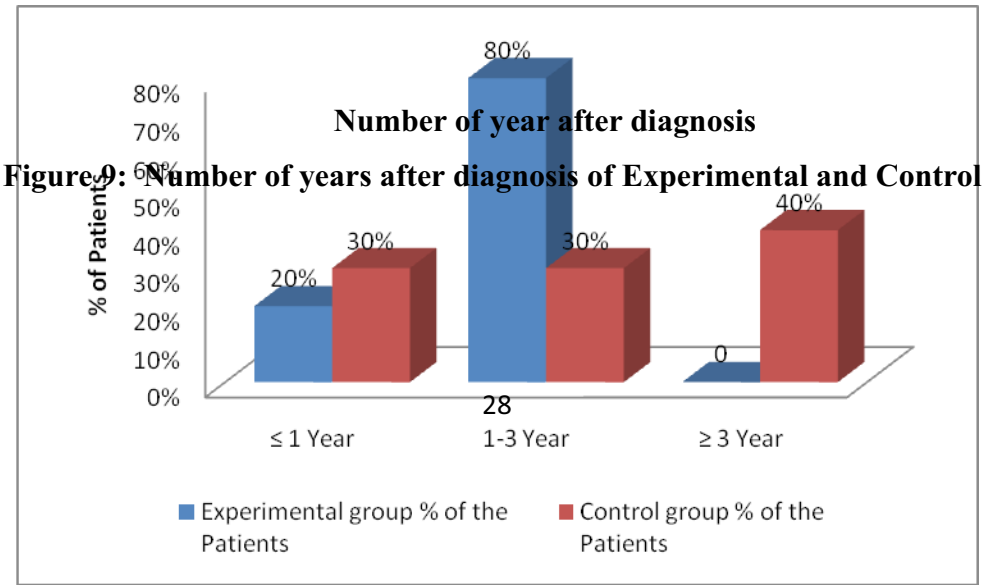
Number of years after diagnosis

Figure-8: Physical findings of Experimental and Control Group



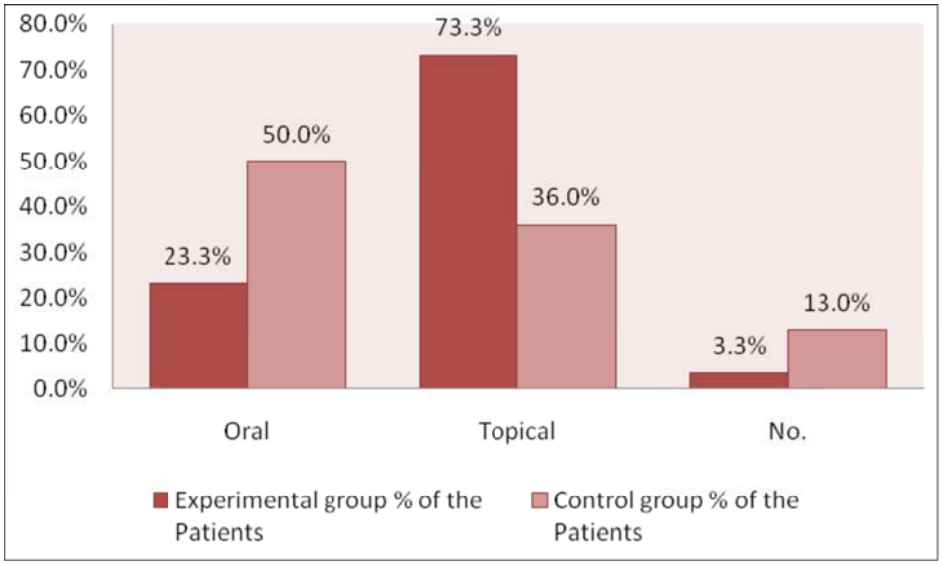
Number of year after diagnosis

Figure-9: Number of years after diagnosis of Experimental and Control Group.



Pain Medication

Figure 10: Use of any kind of pain medication among experimental and control group.



SECTION – II

Pre and post assessment of pain and activity of daily living of Osteoarthritis patients of experimental and control group.

Table 2: Pretest and post test assessment of pain of experimental group.

Pain Level	Pre test Experimental	Post test Experimental

	No	%	No	%
Mild	-	-	25	83.3
Moderate	1	3.3	5	16.7
Severe	17	56.7	-	-
Unbearable	12	40.0	-	-

Table-2 shows the pretest and post test pain score of the experimental group. Moderate 1 (3.3%) Severe 17 (56.75), and unbearable 12 (40%) pain of pretest was transferred into mild 25(83.3%) and moderate 5 (16.7%) of post test score.

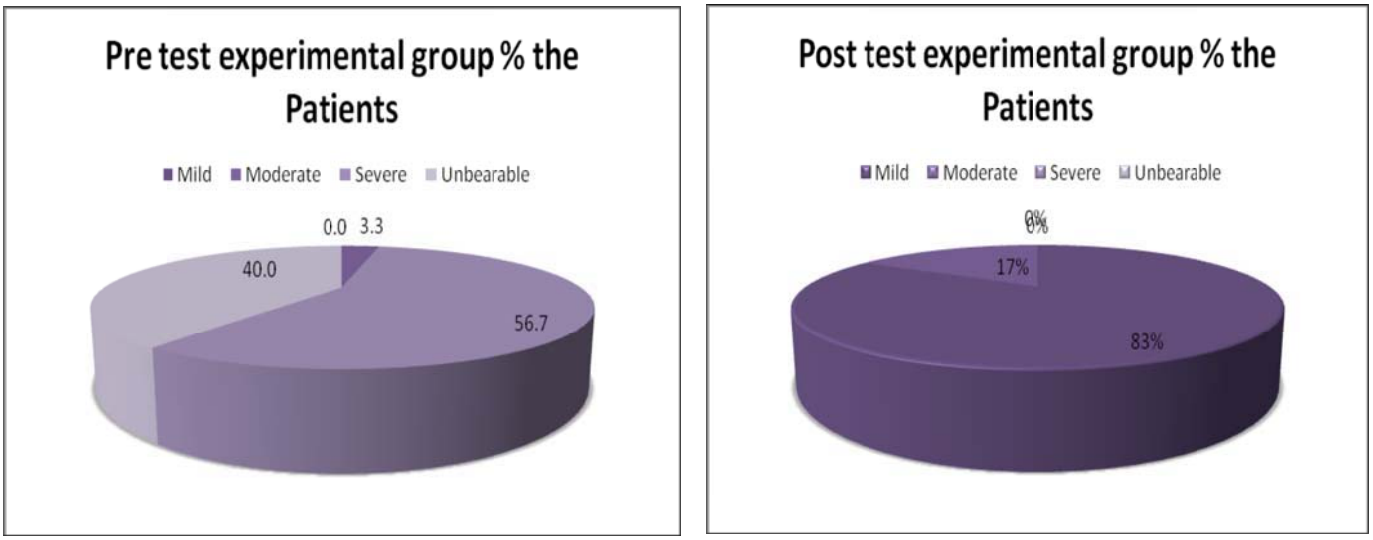


Figure 11: Pre test and Post test level of pain of Experimental Group.

Table 3: Pretest and post test assessment of pain score of Control group.

Pain Level	Pre test Control Group		Post test Control Group	
	No	%	No	%
Mild	-	-	1	3.3
Moderate	7	23.3	7	23.3

Severe	20	66.7	22	73.4
Unbearable	3	10.0	-	-

Table-3 shows the pre test and post test pain score of the control group. Moderate 7 (23.3%), Severe 20 (66.7%) and unbearable 3 (10%) of pre test was transferred into mild 1 (3.3%), moderate 7(23.3%), severe 22 (73.4%) of the post.

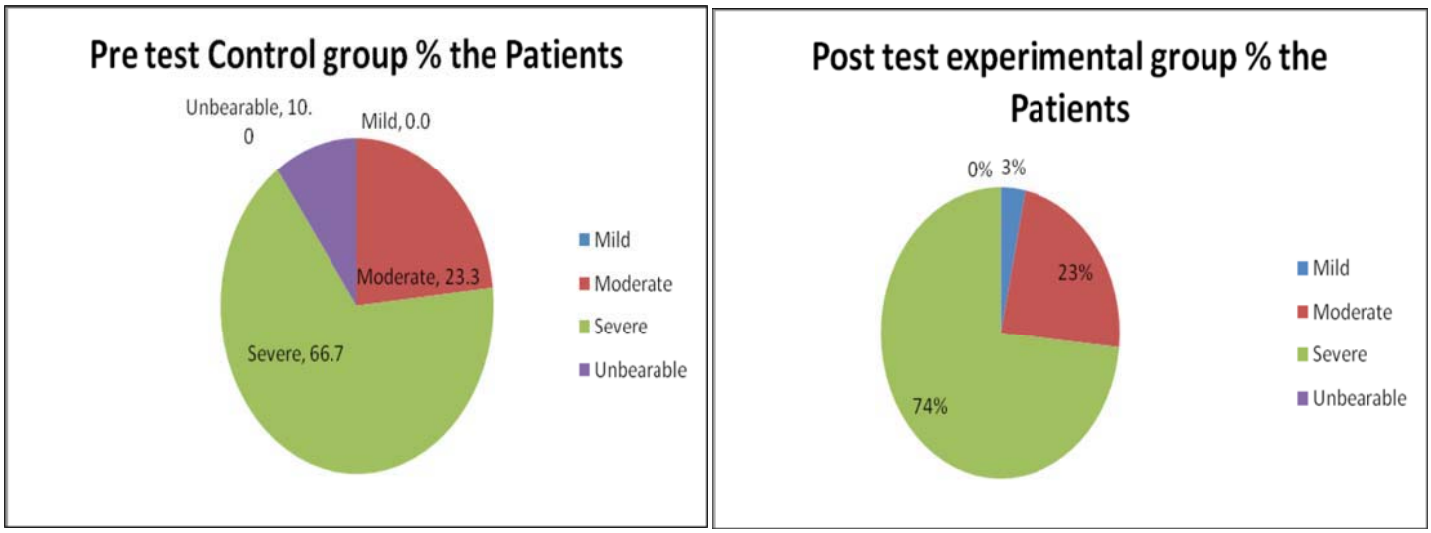


Figure 12: Pre test and Post test level of pain of Control Group.

Table 4: Pretest and post test assessment of activity of Daily living score of experimental group

ADL Score	Pre test Experimental group		Post Test Experimental Group	
	No	**%**	**No**	**%**
Low	1	3.3	-	-
Moderate	29	96.7	1	3.3
High	-	-	29	96.7

Table-4: The pre test activity of daily living of the experimental group low 1(3.3%), moderate 29 (96.7%), transferred into post test moderate 1 (3.3%) and high level activity 29 (96.7%)

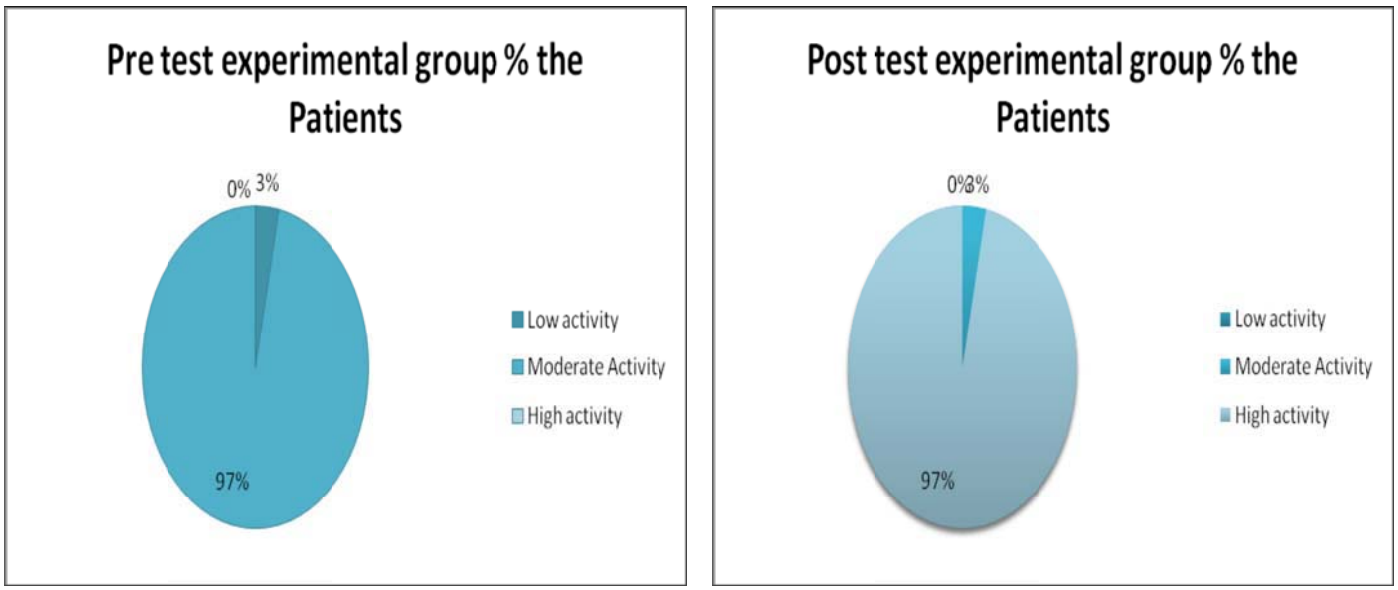


Figure 13: Pre test and Post test activity of daily living of experimental group

Table 5: Pretest and Post test assessment of activity of daily living score of the control group.

ADL Score	Pre Test Control group		Post Test Control Group	
	No	%	No	%
Low	7	23.3	-	-
Moderate	23	76.7	29	96.7
High	-	-	1	3.3

Table- 5: The pre test and post test activity of daily living of control group in pre test low 7 (23.3%), moderate 23 (76.7%), transferred into post test Moderate 29 (96.7%), and high level activity 1 (3.3%) .

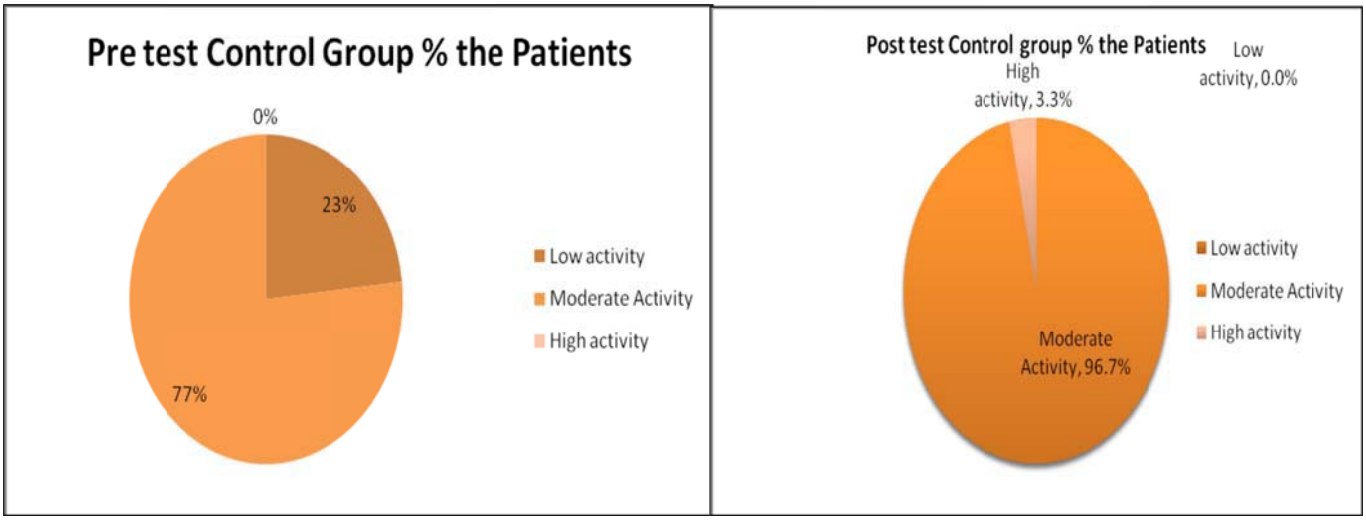


Figure 14: Pre test and Post test activity of daily living of control group

SECTION – III

Table 6: Effectiveness of reflexology in experimental and control group.

	Experimental group	Control group
Number	30	30
Mean increase	29.4	8.4
SD	6.3	2.5
't' paired	26.7	16.8
Significance level	P < 0.001	P< 0.001

Table-6: Show the mean increase 29.4 and 8.4, SD 6.3 and 2.5, 't' paired 26.7 and 16.8, significance level P <0.001 for the experimental Control group respectively.

SECTION IV

Table-7: Post test association of the level of pain with the selected demographic variables in experimental group.

S. N.	Demographic variables	Mild		Moderate		Total		x^2	df	Significance level
		No	%	No	%	No	%			
1.	**Age in years**									
	a) 40-60 years	1	4	2	40	3	10			
	b) 51-60 years	15	60	2	40	17	56.6	17.6	2	S
	c) ≥ 60 years	9	36	1	20	10	33.3			
2.	**Gender**									
	a) Male	8	32	2	8	10	33.3	0.1	1	NS
	b) Female	17	68	3	12	20	66.6			
3.	**Educational Status**									

	a) illiterate	-	-	-	-	-	-			
	b) Primary School	-	-	-	-	-	-			
	c) Middle School	7	28.0	1	20	8	26.7	0.2	2	NS
	d) High School	14	56.0	3	60	17	56.7			
	e) Graduate	4	16.0	1	20	5	16.6			
4.	**Occupation**									
	a) Sedentary work	4	16	-	-	4	13.3			
	b) Moderate work	18	72	5	100	23	76.7	1.8	2	NS
	c) Heavy work	3	12	-	-	3	10.0			
	d) Unemployed	-	-	-	-	-	-			
5.	**Marital Status**									
	a) Single	-	-	-	-	-	-			
	b) Married	22	88	4	80	26	86.7	0.2	2	NS
	c) Widower / Widow	3	12	1	20	4	13.3			
6.	**Body weight in Kilogram**									
	a) Less than 49 Kg	14	56	1	20	11	36.7			
	b) 50 – 70 Kg	9	36	-	-	9	30.0	13.5	1	S
	c) 71 – 90 KG	2	8	4	80	10	33.3			
7.	**Residential area**									
	a) Rural	1	4	1	20	2	6.7	0.1	1	NS
	b) Urban	24	96	4	80	28	93.3			
8.	**Type of Family**									
	a) Joint family	22	88	5	100	27	90	0.7	1	NS
	b) Nuclear family	3	12	-	-	3	10			
9.	**Systemic diseases**									
	a) Yes	3	12	4	80	7	23.3	10.7	1	S
	b) No	22	88	1	20	23	76.7			

S. N.	**Demographic variables**	**Mild**		**Moderate**		**Total**		**x^2**	**df**	**Significance level**
		No	**%**	**No**	**%**	**No**	**%**			
10.	**<u>Clinical variables</u>**									
	History of Osteoarthritis									
	a) family history of Osteoarthritis	1	4	-	-	1	3.3			
	b) History of joint pain	11	44	3	60	14	46.7	0.5	2	NS
	c) Medical history	13	52	2	40	15	50.0			
11.	**Physical findings**									
	a) Joint swelling	1	4	-	-	1	3.3			
	b) Joint tenderness									NS
	c) Decreased range of motion in joints	14	56	5	100	19	63.4	3.5	2	
		10	40	-	-	10	33.3			
12.	**Number of Years**									

	After diagnosis as Osteoarthritis									
	a) Less than 1 Year	3	12	3	60	6	20	6.0	1	S
	b) 1-3 Years	22	88	2	40	24	80			
	c) More than 3 years	-	-	-	-	-	-			
13.	**Use of any kind of pain medication**									
	a) Oral	3	12	4	80	7	23.3			
	b) Topical	21	84	1	20	22	73.4	10.7	2	S
	c) No.	1	4	-	-	1	3.3			

S - Significant;

NS - Not Significant

Table-7: Shows the significant association of the post test score of pain on the selected demographic variables of age, body weight, systemic diseases, No. of years after the diagnosis and use of medications the experimental group.

No association of the post test score of pain of the selected demographic variable are gender, educational status, occupation, marital status, residential area, type of family, history of Osteoarthritis and physical findings.

SECTION – V

Table-8: Post test association of the activity of daily living score of the selected demographic variables in the experimental group. P < 0.01

S. N	Demographic variables	Moderate		High		Total		x^2	df	Significance level
		No	%	No	%	No	%			
1.	**Age in years**									
	a) 40-60 years	2	40	1	4	3	10.0			
	b) 51-60 years	2	40	15	60	17	56.7	17.6	2	S
	c) ≥ 60 years	1	20	9	36	10	33.3			
2.	**Gender**									
	a) Male	1	20	10	40	11	36.7			NS
	b) Female	4	80	15	60	19	63.3	0.5	1	
3.	**Educational Status**									
	a) illiterate	-	-	-	-	-	-			
	b) Primary School	-	-	-	-	-	-			

	c) Middle School d) High School e) Graduate	- 5 -	- 100 -	8 12 5	32 48 20	8 17 5	26.7 56.6 16.7	0.8	2	NS
4.	**Occupation** a) Sedentary work b) Moderate work c) Heavy work d) Unemployed	 - 5 - -	 - 100 - -	 4 18 3 -	 16 72 12 -	 4 23 3 -	 13.3 76.7 10.0 -	0.8	2	NS
5.	**Marital Status** a) Single b) Married c) Widower / Widow	 - - 5	 - - 100	 - 22 3	 - 88 12	 - 22 8	 - 73.3 26.7	6.7	1	S
6.	**Body weight in Kilogram** a) Less than 49 Kg b) 50 – 70 Kg c) 71 – 90 KG	 1 - 4	 20 - 80	 14 9 2	 56 36 8	 15 9 6	 50 30 20	13.5	2	S
7.	**Residential area** a) Rural b) Urban	 1 24	 4 96	 1 4	 20 80	 2 28	 6.7 93.3	0.1	1	NS
8.	**Type of Family** a) Joint family b) Nuclear family	 5 -	 100 -	 22 3	 88 12	 27 3	 90 10	0.1	1	NS
9.	**Systemic diseases** a) Yes b) No	 4 1	 80 20	 3 22	 12 88	 7 23	 23.3 76.7	10.7	1	S
S. N	**Demographic variables**	**Moderate**		**High**		**Total**		**x^2**	**df**	**Significance level**
		No	**%**	**No**	**%**	**No**	**%**			
10	**<u>Clinical variables</u>** **History of Osteoarthritis** a) family history of Osteoarthritis b) History of joint pain c) Medical history	 - - 5	 - - 100	 1 14 10	 4 56 40	 1 14 15	 3.3 46.7 50.0	1.0	2	NS
11	**Physical findings** a) Joint swelling b) Joint tenderness c) Decreased range of motion in joints	 - - 5	 - - 100	 1 19 5	 4 76 20.0	 1 19 10	 3.3 63.3 33.4	2.1	2	NS
12	**Number of Years After diagnosis as Osteoarthritis**									

	a) Less than 1 Year b) 1-3 Years c) More than 3 years	3 2 -	60 40 -	3 22 -	12 88 -	6 24 -	20 80 -	6.0	1	S
13	**Use of any kind of pain medication** a) Oral b) Topical c) No.	4 1 -	80 20 -	3 21 1	12.0 84.0 3.3	7 22 1	23.4 73.3 3.3	10.7	2	S

S - Significant;

NS - Not Significant

Table-8: Shows the significant association of Post test score of activity of daily living of the selected demographic variables age, marital status, body weight, systemic diseases, No. of years after diagnosis, use of pain medications in the experimental group.

No association of the post test score of activity of daily living of the selected demographic variables are gender, educational status, occupation, residential area, type of family, history of Osteoarthritis and physical findings.

CHAPTER – V

DISCUSSION

The purpose of the study is to "Assess the effectiveness of reflexology on pain and activity of Daily living of Osteoarthritis patients".

The study was conducted in the orthopedic medicine Out Patients Department of Dr. Kamakshi memorial Hospital, Pallikaranai, Chennai. This hospital also functions as a Research Institute. Physiotherapy department also work along with the orthopedic department patients were receiving medical treatment in the outpatient department as well in the inpatient department. Complementary interventions were not available in the outpatient department.

The researcher while conducting the study many patients revealed their opinion regarding their health condition. Arthritis is a pain of knee and decreases the movement and treatment requires for long period. They told that, they were not aware of reflexology and its effectiveness. The researcher explained the disease condition, and the effects of reflexology. Then they accepted, and voluntarily gave willingness and co-operation to participate in the study.

The demographic data of the Osteoarthritis patients revealed that the majority of the patients belong to the age group of above 50 years. Age is the risk factor for the development of Osteoarthritis. Majority of the samples 66.3% were females. Most of the samples educational status (56.7%) were Higher Secondary Education. They were working under the moderate work category (76.7%). All the samples were married. Samples body weight were 50% of them below 49 kilograms and 20% of them 50-70 kilograms and 20% of them ≥ 71 kilograms. All the samples were from the urban area. Majority (90%) of the sample live as a joint family.

The data regarding disease information, majority of the patients (46.7% & 56.7%) of experimental & control group) are having the history of joint pain. Majority of the patients (63.3%) have the joint tenderness. The data regarding the diagnosis as Osteoarthritis was 1-3 years (80%). 23.3% of the samples are taking the oral pain medications. Majority of the patients having the joint tenderness and impaired daily activity. The nurse practitioner should motivate the patient to adopt the self reflexology technique to reduce pain and improve the activity of daily living.

The first objective of the study is to assess the pretest level of pain and Activity of Daily Living among Osteoarthritis patients between experimental and control group.

With reference to table No.2 and 3 the pretest level of pain among experimental and control group majority of them were in severe level 17 (56.7%) and 20(66.7%) respectively in each group.

According to table No.4 and 5 the pretest level of activity of daily living score among experimental & control group majority of them were in moderate level 29 (96.7%) and 23 (76.7%) respectively in each group.

The results of the present study was supported by the results of the study done by **Michel Juberg, BA et al (2014)** done a study assessed the efficacy of massage among veterans affairs health care users with knee Osteoarthritis. Participants were 25VA health care. User with symptomatic knee Osteoarthritis. Participants mean age was 57 yrs (12SD) 68% were male and 53% were African American. The mean baseline total WOMAC score was 62.9 (16.1 SD) following the eight week intervention, mean total WOMAC Scores decreased to 45.4 (22.6 SD, P = 0.001, 95% CI (9.9, 32.2) , indicating 32% improvement PROMIS – P1 showed a 14.3% improvement (P = 0.005) and overall level of pain (VAS) decreased by 22% (P=0.001).

Comparison of pretest Activity of daily living between experimental group & control of by **Chung Soon kim et al (2014)** done a study to assess the effects of foot reflexology on arthralgia, ankylosis; Depression and sleep in community dwelling elderly women with Osteoarthritis, Participants were 47 elderly women 22 in the experimental group and 25 in the control group. The experimental group received foot reflexology twice a week for 4 weeks. The result showed that foot reflexology was statistically significant effective in reducing arthralgia ankylosis and depression and improving the quality of sleep as evidenced by differences between two groups.

The second objective of the study to assess the post test level of pain and activity of daily living among Osteoarthritis patients between experimental and control.

With reference to table No.2 the post test level of pain among experimental group majority was in mild level 25 (83.3%) with reference to Table No.3 the post test level of pain among control group majority were in severe 22 (73.4%)

According to table No.4 the post test level of activity of daily living among the experimental group the majority were in high level 29 (96.7%). According to table No.5 the post test level of activity daily living among control group the majority were in moderate level 29 (96.7%).

The result of the present study was supported by the result of the study done by an experimental pre test – post test controlled clinical trial study was conducted to determine the effect of foot reflexology on self reported Osteoarthritis joint pain. A convenience 119 sample were randomly assigned to three groups (41 in treatment – foot reflexology, 39 in place bo – foot massage, and 39 in control – arthritis information). Pain was measured before and after the 15 minute intervention by using Short form MC Gill pain Questionnaire. The effect may be explained by the gate control theory. A Power analysis and multiple regressions were used to analyse the hypothesis. The study result shown that after foot reflexology the experimental group shown significant improvement in pain (F=155.77, P=.000) and depression (F=20.00, P=.000). The results suggest that the foot reflexology is effective in relieving of pain and depression. Therefore, it is necessary to develop foot reflexology as an independent nursing intervention.

The third objective of the study to compare the effectiveness of reflexology on pain and activity of daily living among Osteoarthritis patients between experimental and control group.

With reference to table No.2 to 5 the comparison of pretest and post test assessment of pain and activity of daily living score among experimental group. There was a significant reduction of pain from sever (56.7%), unbearable (40%) to mild (83.3%) and moderate (16.7%) in post test. There was a significant improvement in the daily activity from low activity (3.3%) and moderate activity (96.7%) to moderate (3.3%) and High level of activity 96.7% has been improved in the post test of the experimental group.

According to Table No.6 means increase in experimental group was 29.4 (± 6.3 SD) were as in control group mean increase was only 8.4 (± 2.5 SD) the calculated paired t test value was found to be significant at 26.7 ($P < 0.001$). But in control group the paired t test value was 16.8 at ($P < 0.001$) which were not significant.

The above result indicates reflexology is effective in reducing the level of pain and increasing the level of activity of daily living. Hence the stated hypothesis "There is a significant difference in pre test and post test score of pain and activity of daily living among Osteoarthritis patients" is **accepted.**

The result of the present study was supported by the result of the study done by A quasi experimental with simple cross over design used to study the effect of reflexology on joint pain

in knee Osteoarthritis patients. About 30 samples were selected by using purposive sampling technique during July 2002 to February 2003 at the Orthopedic Clinic and outpatient department of phrae hospital. During experimental period patients received reflexology for 1 hour per day for seven days and in the control period patients did not received reflexology for 7 days. The instrument used for data collection was demographic data, information about knee Osteoarthritis, daily record of joint pain, medication used and daily activities. The data analysed by using frequency, mean, standard deviation and ANOVA. The results of the study shown that the joint pain score in the experimental period after receiving reflexology was statistically lower than during the control period (P<.001). So the study revealed that reflexology can be used as a complementary therapy to relieve joint pain and decrease the use of pain relieving drugs.

The fourth objective of the study to find out the association between the level of pain and activity of daily living with selected demographic variable in experimental group.

Table No.7 shows the significant association of post test score of pain on the selected demographic variables of age, body weight, systemic diseases, No. of years after the diagnosis and use of medications in the experimental group $P < 0.01$.

With reference to table No.8 Shows the Association of Post test score of activity of daily living of the selected demographic variables age, marital status, body weight, systemic diseases, No. of years after diagnosis, use of pain medications in the experimental group $P < 0.01$.

The result of the present study was supported by the result of the study done by **Lee, Jeongsoon et al (2011),** done a systematic review and Meta analysis were conducted. Electronic data base and manual searches were conducted on all published studies, 15 associated with fatigue, 18 associated with sleep and 11 with pain. The effects on fatigue, sleep, and pain were not homogeneous and ranged from 0.63 to 5.29, 0.01 to 3.22 and 0.43 to 2.67 respectively.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

6.1 SUMMARY

Osteoarthritis is a chronic health problem as it involves modification in several aspects of life. This study is done to reduce the joint pain and improve the activity of daily living by performing reflexology to the Osteoarthritis patients attending outpatients department of Orthopedic Medicine at Dr. Kamakshi Memorial Hospital, Chennai.

The objectives of the study were:

- To assess the pre test level of pain and Activity of Daily Living among Osteoarthritis patients between experimental and control group.
- To assess the post test level of pain and Activity of Daily Living among Osteoarthritis patients between the experimental and control group.
- To compare the effectiveness of reflexology on pain and Activity of Daily Living among Osteoarthritis patients between the experimental and control group.
- To find out the association of the level of pain and Activity of Daily Living with the selected demographic variables among experimental group.

The research hypothesis were formulated was

There is a significant difference in pre test and post test score of pain and activity of daily living among Osteoarthritis patients.

The variables of the study were

Independent variable: reflexology.

Dependent variable: Joint pain, impaired activity of daily living.

The review of literature was done from primary and secondary sources that formed the basis of problem selection, development of tool, drawing the conceptual frame work, the method and reflexology techniques.

The conceptual frame work for the study was based on Kenny's open system theory and it provided a comprehensive framework for achieving the objectives of the study. The research design used in the study was pre test post test control group design.

The study was conducted in the orthopedic medicine outpatient department of Dr. Kamakshi Memorial Hospital, Chennai.

The tool consists of demographic variable clinical variable and modified Health Assessment Questionnaire (Activity of Daily living scale). It was validated by medical and nursing experts.

The pilot study was conducted after getting formal permission from the Head of the Department of Orthopedic medicine at Dr. Kamakshi Memorial Hospital, Chennai. The result revealed that reflexology had significant effect in reducing joint pain and improving the activity of daily living of Osteoarthritis patients. The reliability was established using split half technique.

The main study was conducted at the orthopedic medicine outpatient department, Dr. Kamakshi Memorial Hospital, Chennai. The sample consists of 60 Osteoarthritis patients. The experimental and control group was allotted by using simple Random sampling method. The data collected was analyzed using descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY

- The result showed that there was a significant difference of pain in the pre test from severe (56.7%), unbearable (40%) to the post test of mild (83.3%) and moderate (16.7%) pain of experimental group.
- With regarding the activity of daily living of the experimental group, shows there is a significant difference between pre test and post test values are low activity (3.3%) and moderate activity (96.7%) to the post test of moderate (3.3%) and high level of activity 96.7% has been improved in the experimental group.
- Comparing the effectiveness of foot reflexology in experimental and control group the experimental group had 29.4 mean increases in the activity of daily living but control group only 8.4 mean increases of ADL. It was confirmed by using student‘t’ paired value is 26.7 $P < 0.001$ is significant hence the stated hypothesis is accepted.
- Association between the post test level of pain with some of the demographic variables of the experimental group are age $x^2 = 17.6$ and df = 1 and it is statistically significant; body weight $x^2 = 13.5$, df = 1 and it is significant; systemic diseases $x^2 = 10.7$, df=1 significance; No. of year after the diagnosis x^2 6.0, df=1 significance; use of any kind of pain medication $x^2 = 10.7$; df=1, significant.

Association between the post test level of activity of daily living of some of the demographic variables of the experimental group are age $x^2 = 17.6$; body weight $x^2 = 13.5$; systemic diseases $x^2 = 10.7$; No. of years after diagnosis $x^2 = 6.0$; use of any kind of pain medication $x^2 = 10.7$; df=1 all the variables are significant.

6.2 CONCLUSION:

The present study assessed the effectiveness of reflexology among Osteoarthritis patients. The results revealed that reflexology had significant effect in reducing level of joint pain and improving the activity of daily living. Hence the researcher concludes thus reflexology health the patients in reducing the level of pain, improve physical activity, health status and also improve the capacity to perform activities of daily living.

6.3 IMPLICATION

The researcher had drawn the following implication, in the field of nursing service, nursing administration, nursing education and nursing research.

NURSING PRACTICE:

Nurses working in the orthopedic medicine department play a vital role within the multi disciplinary team of orthopedic rehabilitation. The various role of the nurses in the Orthopedic rehabilitation are as an educator, co-ordinator, care provider orthopedic nursing. Evolving nurse's role is not only to administer drug but also therapeutic and complementary intervention like reflexology for patients with Osteoarthritis.

Nurses should be trained for doing reflexology. Reflexology services are multi disciplinary and include assessment, education, physical reconditioning, skill training and physiological support. Nurses working in hospital, community and clinic could perform reflexology to reduce the level of pain and improve the activity of Daily living as independent nurse practitioner.

NURSIGN ADMINISTRATION

The nurse administrator should conduct in service education programs for staff nurses regarding orthopedic rehabilitation. The nurse administrator should supervise nurses and provide necessary support for the standards of practice and education for Osteoarthritis patients. The nurse administrator should take initiation to establish reflexology programme in outpatient basis and home care.

NURSING EDUCATION

Nurse educator should incorporate the reflexology as a complementary therapy in nursing curriculum. She should give training regarding reflexology technique. Nurse

educator should assign students should perform reflexology for reducing pain level and improve the activity of daily living.

Nursing educator must provide adequate training exposure in orthopedic medicine and stresses the need for the public awareness regarding reflexology.

NURSING RESEARCH

Nurse researcher should encourage clinical nurse to apply the research findings in their daily nursing care activities to reduce pain level and improve the activity of daily living. She must motivate the nurse to do further research studies on the effectiveness of reflexology with Osteoarthritis patients.

She should conduct periodic review of research findings and disseminate the findings through conference, seminars, and publications in professional, national and international journals and in the World Wide Web.

6.4 RECOMMENDATIONS:

1. The study can be replicated with larger samples and longer period for better generalization.
2. A study can be conducted by using different strategies (Quality of life questionnaires).
3. A comparative study can be conducted in inpatient and old age homes.
4. Reflexology program to be established in the orthopedic medicine department.
5. Health camp to be conducted periodically both in urban & rural area to detect early and treat the condition (Osteoarthritis) along with complimentary therapy.

6.5 LIMITATIONS:

1. The study period was limited to one month.
2. The study was limited to 60 samples.
3. The researcher faced difficulties in collecting the related Indian literatures.
4. The study was limited to only verbal descriptive pain scale and modified health assessment questionnaire (activity of daily living scale)
5. Because of the individual differences the researcher faced difficulty in gaining the confidence and co-operation from the patients.

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PART – A

Demographic Data and Clinical Variables

Requested to give appropriate information Tick (✓) in correctly

1. Age in years
   a) 40 - 50 years
   b) 51 – 60 years
   c) 61 –70 years
2. Gender
   a) Male
   b) Female
3. Educational status
   a) Illiterate
   b) Primary school
   c) Middle school
   d) High school
   e) Graduate
4. Occupation
   a) Sedentary work
   b) Moderate work
   c) Heavy work
   d) Unemployed
5. Marital Status
   a) Single
   b) Married
   c) Widower/widow
6. Body weight in kilogram
   a) Less than 49 kg
   b) 50 – 70 kg
   c) 71 – 90 kg
7. Residential area
   a) Rural
   b) Urban
8. Type of family
   a) Joint family
   b) Nuclear family
9. Systemic diseases
   a) Yes
   b) No

Clinical Variables:-

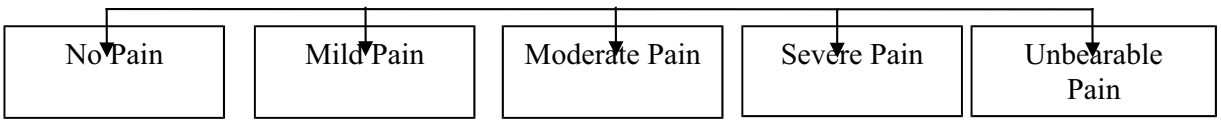
10. History of osteoarthritis
    a) Family history of osteoarthritis
    b) History of joint pain
    c) Medical history

11. Physical findings
    a) Joint swelling
    b) Joint tenderness
    c) Decreased range of motion in joint
12. Number of years after diagnosing as osteoarthritis
    a) Less than one year
    b) 1 – 3 years
    c) More than three years
13. Use of any kind of pain medication
    a) Oral
    b) Topical
    c) No

PART – B

Pain assessment scale

Verbal Descriptive Scale



Pre score:

Post Score:

PART – C

Modified Health Assessment Questionnaire (Activity of Daily Living Scale)

Degree of Difficulty

Are you able to :

S. No	Contents	No Difficulty (5)	Mild Difficulty (4)	Moderate Difficulty (3)	Severe Difficulty (2)	Unable to do (1)
	Dressing & Grooming					
1.	Dress yourself, including tying shoe lace & putting buttons?					
2	Shampoo your hair?					
	Arising					
3	Stand up straight from an armless chair?					
4	Get in and out of bed?					
	Eating					
5	Cut your hard food substance in hand?					
6	Lift a full glass of water to your mouth?					
7	Open a screwed container?					
	Walking					
8	Walk outdoors on flat ground?					
9	Climb up steps?					
	Hygiene					
10	Wash and dry your entire body?					
11	Take a tub bath?					
12	Get on and off the toilet?					
	Reaching					
13	Reach and get down weight object from just above your head?					
14	Bend down to pickup clothing from the floor?					

	Gripping					
15	Open the biro doors?					
16	Open the jars which are very tightly closed?					
17	Turm foucets on and off?					
	Other Activities					
18	Run errands and shop?					
19	Get in and out of a bus?					
20	Can able to kneel down for prayer?					

ùNôkRdÏ±l×

Y¯Øû\Ls: ReL°u ®YWeLû[A°dÏUôß úLhÓd ùLôs¡ú\ôm, N¬Vô] CPj§p (✓) Ï±«PÜm

1. YVÕ
   A) 40-50 YVÕ
   B) 51-60 YVÕ
   C) 61 YVÕdÏ úUp
2. Tô]m
   A) Bi
   B) ùTi
3. Lp®jRÏ§
   A) T¥dLôRYo
   B) BWmTlTs°
   C) SÓ¨ûXlTs°
   D) EVo¨ûXlTs°
   E) ThPRô¬
4. ùRô¯p
   A) ªRUô] úYûX
   B) CPRWUô] úYûX
   C) L¥]Uô] úYûX
   D) úYûX CpXôRYo
5. §ÚUQjRÏ§
   A) §ÚUQUôLôRYo
   B) §ÚUQUô]Yo
   C) ®RûY / Uû]® CZkRYo
6. EPp GûP
   A) 49 ¡,¡ ,r
   B) 50-70 ¡
   C) 71-90 ¡
7. Y£l©Pm
   A) ¡WôUm
   B) SLWm
8. ÏÓmT YûL
   A) áhÓdÏÓmTm
   B) R²dÏÓmTm
9. CWjR UiPX NmUkRUô] ®Vô§Ls
   A) Bm
   B) CpûX

úSôn Tt±V RLYp:

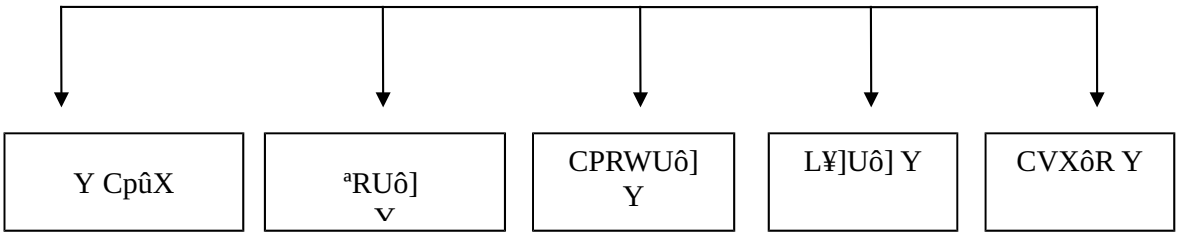
10. Bv¥úVô BojûW¥v Tt±
    A) TWmTûWVôL Es[Õ
    B) êhÓ Y Es[Õ
    C) úSôndLô] UÚjÕY £¡fûN úUtùLôs[lTÓ¡\Õ,

11. EPVp Ã§VôL
    A) Øh¥«p ÅdLm
    B) Øh¥«p Y
    C) Øh¥«u AûNÜLs Ïû\kÕs[Õ
12. Bv¥úVô BojûW¥v G] Eß§lTÓj§V YÚPj§u ®YWm
    A) JÚ YÚPj§tÏ ¸r
    B) 1-3 YÚPm
    C) êuß YÚPj§tÏ úUp
13. Y ¨YôW¦ûV ETúVô¡jRp
    A) EhùLôsÞRp
    B) úUpéfÑ
    C) CpûX

©¬Ü - 2

Y«û] BWôÙm A[ÅÓ

YôojûRVôp ®Y¬dÏm A[ÅÓ:



Øu U§lÀÓ:
©u U§lÀÓ

TÏ§ - C §]N¬ Yôr®Vp ùNVpTôÓLÞdLô] Uôt± AûUdLlThP ÑLôRôW Bn®tLô] ®]ôjRôs

Y. Gi	ùTôÚ]PdLm	LY]ªpûX	ªRUô] LY¥]m	CPRWUô] LY¥]m	ªïŞVô] LY¥]m	ùNVuûU
		(5)	(4)	(3)	(2)	(1)
	EûPLs					

1.	EeL[ôp EûP (U) LôX¦ èpLû[Ùm ùTôjRôuLû[Ùm A¦V ØY¡\Rô?					
2.	RûX Ï°dL ØY¡\Rô?					
	GÝRp					
3.	ûLl©¥ CpXô SôtLô«p CÚkÕ GÝRp					
4.	TÓdûL«p TÓjRp Utßm GÝRp....					
	EQ®p					
5.	L¥]Uô] EQ®û]d ûLL[ôp T¡oRp...					
6.	Ri½o ¨ûWkR úLôlûTûV Yôn AÚúL ùLôQoRp					
7.	L¥]Uô] ê¥«hP TôjşWjûRj ş\jRp					
	SPjRp					
8.	NUR[jşp SPdÏmúTôÕ					
9.	T¥dLhÓL°p SPdÏmúTôÕ					
	çnûU					
10.	EPp ØÝYÕm Ï°jÕj Õ¦Vôp ÕûPlTşp					
11.	¿oúRdLj ùRôh¥«p Ï°lTşp					
12.	L¯Yû\«p AUoYÕ Utßm GÝRp					
	GÓlTşp					
13.	GûPªÏkR ùTôÚû[j RûXdÏ úUp Es[CPjşp CÚkÕ GÓjRp					
14.	RûW«p Es[Õ¦ûVd Ï²kÕ GÓlTşp					
	ûL«p ş\u					
15.	CÚm×l ùTh¥ûV ş\jRp					
16.	L¥]UôL ê¥V úLôlûTûVj ş\dÏmúTôÕ					
17.	ÏZônLû[j ş\dÏmúTôÕm êÓm úTôÕm					
	CRW ùNVpØû\Ls					
18.	®ûWYôLd LûPLû[AûPkÕ ùTôÚhLû[YôeÏRp					
19.	úTÚkşp Hßm ùTôÝÕm. C\eÏm ùTôÝÕm					
20.	LPÜû[ØZeLôp Ui¥«hÓ YQeÏm ùTôÝÕ					

Jl×Rp A±dûL

Sôs:

G]dÏ CkR BnûY Tt±V ØÝ ®YWØm ®[dLUôL GÓjÕûWdLlThPÕ. CkR Bn®p TeÏ ùTßY§p Es[SuûULs Tt± Sôu ×¬kÕ ùLôiúPu. Sôu CkR Bn®p Rô]ôLúY ØuYkÕ TeÏ ùTß¡ú\u. úUÛm, G]dÏ CkR Bn®p CÚkÕ GkR úSWØm ®X¡d ùLôs[ØÝ AàU§ YZeLlThÓs[Õ. GuàûPV BnÜ Utßm £¡fûN BYQeLû[TôoûY«hÓ A§p Es[®YWeLû[Bn®p TVuTÓj§d ùLôs[AàU§ A°d¡ú\u. GuàûPV ùTVo Utßm AûPVô[eLs WL£VUôL ûYjÕd ùLôs[lTÓm Gußm G]dÏ Eß§ A°dLlThÓs[Õ.

ClT¥dÏ,

REFLEXOLOGY

Definition:

Reflexology is the application of the pressure onto particular areas of the soles of the feet. A reflex action is another part of the body is stimulated by the manipulation of each specific area.

History:

Thai massage is an art of healing originated some 5,000 years ago. It was mentioned in an ancient Chinese medical textbook in the reign of Emperor Wendi

(179-157 B.C) on Han Dynasty and in Indian Ayurveda Book that "massage in an self-healing method."

Hippocrates (460-380 B.C), who received an honour as "the father of medical study", stated that "a physician needs to specialize in several things but being an expert in massage in a must."

Reflexology is a traditional Chinese medicine. Chi-Energy flow. It is a complementary medicine.

Indications:

- Any kind of pain
- Cervical spondylosis
- Cancer
- Kidney stone pain
- In faction
- Asthma
- Insomnia

Heart attack

Effects of Reflexology:

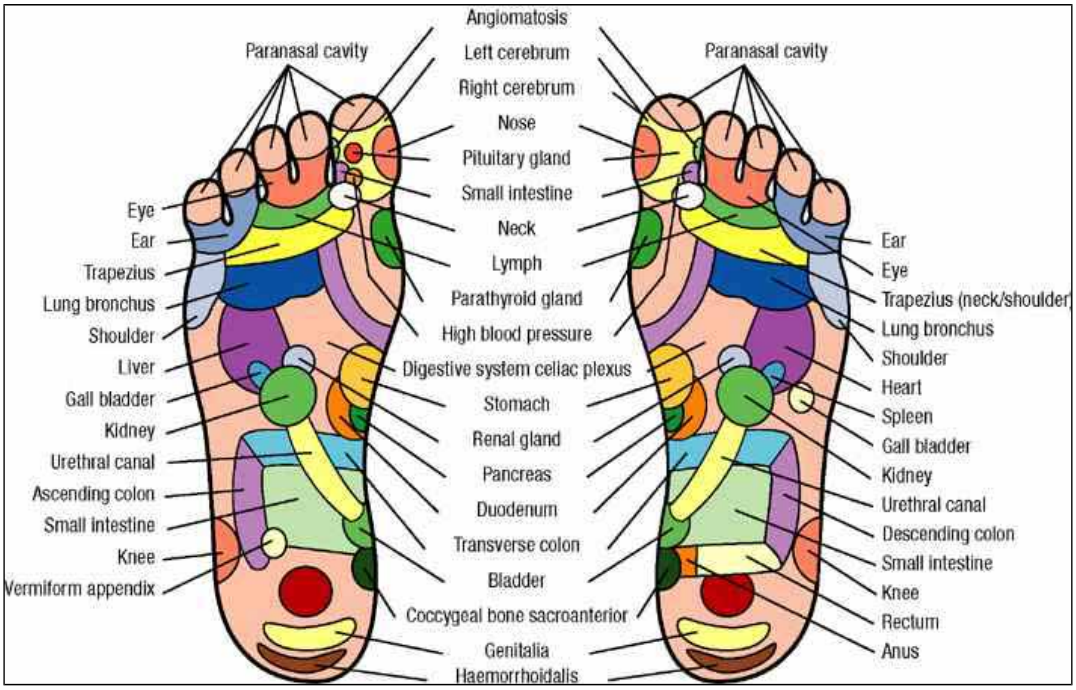
According to Chinese medicine the sensory nerves of the internal organs that spread throughout the body are mainly gathered around the soles of the feet.

The massage is effective in stimulating the functions of the internal organs. Another advantage of this therapy is that there is no risk. Expert messengers will deal with the critical points on the feet with utmost care. The pain felt there will disappear when the masseur finishes the process. Triggering the nervous system, releasing (Chi) energy.

Benefits of foot Reflexology massage:

1. It can relieve pain stiffness caused by too much exercising or using muscle for too long.
2. It can help prevent and cure many symptoms such as headache, stress, asthama, constipation, sinusitisq migraine.
3. The blood circulation system will be boosted.
4. The body's function will be naturally turned.

Reflexology Chart



Technique used:

- Finger pop method
- Press r slide
- Rubbing
- Pinching
- Finishing

Method:

- Rhythmicity
- Continuity
- 10 to 15 minutes for each leg.

Restrictions:

1. The massage must be done with accuracy to avoid wrong reflection which will cause muscle infection.
2. One should not receive a massage until at least one hour after a meal.

3. After receiving a massage, one is required to drink water to eliminate toxin and lactic acids developed during the massage process.
4. Pregnant women, menstruating women and people who are bleeding either internally or externally are not allowed.
5. The duration for the both feet should not exceed 45 minutes. Only 10 minutes allowed for patients with heart attack.

Reg. No: TN/1879

Dr.PRAVEERA'S INSTITUTE OF HERBAL SOLUTIONS

G-39A V.O.C Nagar, Chintamani, Anna nagar East, Chennai - 600 102, India

www.dpihsayurveda.com

(AFFILATED TO BHARAT SEVAK SAMAJ, NATIONAL DEVELOPMENT AGENCY PROMOTED BY GOVERNMENT OF INDIA)

Course Completion Certificate

This is to certify that Mr/Ms. J. GAYATHRI DEVI has been admitted to the course on Certificate in Reflexology of 2 weeks duration from 2.03.15 He/She has successfully completed the course with practical training with grade A/~~B~~/C and qualified to receive this certificate.

Date 13/3/15

Reg No. TN / 1879

13/3/15

Principal & Managing Director

LETTER SEEKING THE PERMISSION TO CONDUCT THE STUDY

DR. KAMAKSHI MEMORIAL HOSPITAL ACADEMICS SECTION CHENNAI-600 100

From:

J.Gayathri Devi,
M.Sc(N) II Year Student,
Medical Surgical Nursing Speciality,
Padmasree College of Nursing,
Walajabad-631605.
Kancheepuram Dist.

To,

The Medical Superintendent,
Dr.Kamatchi Memorial Hospital,'
Pallikaranai,
Chennai.

Through Proper Channel,

Respected Sir,

Sub: Padmasree College of Nursing – M.Sc (N) Second Year Medical Surgical Nursing Student – Permission for conducting study in orthopedic department at Dr.Kamatchi Memorial Hospital – Request – Reg.

I Mrs.J.Gayathri Devi, M.Sc (N) Second Year Medical Surgical Nursing Student of Padmasree College of Nursing, Walajabad, Kanchipuram Dist in Partial fulfillment of M.Sc(N) have a plan to conduct study on the topic mentioned below at orthopedic Department, Pallikaranai, Chennai. The study period is from 01.5.2015 to 31.5.2015. I assure that I will not interfere with the routine activity of the department.

Photo 1:

The Topic is " A STUDY TO ASSESS THE EFFECTIVENESS OF REFLEXOLOGY ON PAIN AND ACTIVITY OF DAILY LIVING OF PATIENTS WITH OSTEOARTHRITIS ATTENDING OUT PATIENT DEPARTMENT OF ORTHOPEDIC DEPARTMENT, DR.KAMATCHI MEMORIAL HOSPITAL CHENNAI."

Kindly consider my request and permit me to conduct the study.

Thanking you,

Yours faithfully,
J.Gayathri Devi
(J.Gayathri Devi)

Forwarded for
necessary action.
Prof. Dr. K. Jayanthi
27/4/15
PRINCIPAL,
Padmasree College of Nursing,
20A, Masilamani Nagar, Walajabad,
Kanchipuram to Chengalpet Road.
Tamil Nadu - 631 605.

Dr. KAMAKSHI INSTITUTE OF MEDICAL SCIENCES AND RESEARCH
#1, Radial Road, Pallikaranai,
Chennai-600 100.

LETTER REQUESTING OPINION AND SUGGESTION OF

EXPERTS FOR THE CONTENT VALIDITY OF

RESEARCH TOPIC AND TOOL

From:

J.Gayathri Devi
M.SC(N) II Yr Student,
Medical Surgical Nursing Speciality,
Padmasree College of Nursing,Walajabad

To,

Dr.Kokilavani , M.SC(N).,M.phil.,
Principal,
Adhiparasakthi College of Nursing
Melmaruvathur.

Respected Sir,

Sub: Content validity for M.SC(N) dissertation requested – reg.

I Herewith enclose the tool Pertaining to my study for the content validity .

In this regard I request you to kindly validate the enclosed tool and give your valuable suggestions as below mentioned topic.

The Topic is "A STUDY TO ASSESS THE EFFECTIVENESS OF REFLEXOLOGY ON PAIN AND ACTIVITY OF DAILY LIVING OF OSTEO ARTHRITIS ATTENDING OUTPATIENT DEPARTMENT OF DR.KAMATCHI MEMORIAL HOSPITAL AT CHENNAI".

Thanking you,

Yours faithfully,
J.Gayathri Devi.
(J.GAYATHRI DEVI)

Forwarded
22.1.15

29/9/15

PRINCIPAL,
Padmasree College of Nursing,
20A, Mevalurkuppam Nagar, Walajabad,
Kanchipuram to Chengalpet Road.
Tamil Nadu - 631 605.

LETTER REQUESTING OPINION AND SUGGESTION OF

EXPERTS FOR THE CONTENT VALIDITY OF

RESEARCH TOPIC AND TOOL

From:

J.Gayathri Devi
M.SC(N) II Yr Student,
Medical Surgical Nursing Speciality,
Padmasree College of Nursing,Walajabad

To,

Ms.Reena M.SC(N)
Principal,
Allied Health Sciences,
Dr.Kamakshi Memorial Hospital,
Chennai.

Respected Sir,

Sub: Content validity for M.SC(N) dissertation requested – reg.

I Herewith enclose the tool Pertaining to my study for the content validity .

In this regard I request you to kindly validate the enclosed tool and give your valuable suggestions as below mentioned topic.

The Topic is "A STUDY TO ASSESS THE EFFECTIVENESS OF REFLEXOLOGY ON PAIN AND ACTIVITY OF DAILY LIVING OF OSTEO ARTHRITIS ATTENDING OUTPATIENT DEPARTMENT OF DR.KAMATCHI MEMORIAL HOSPITAL AT CHENNAI".

Thanking you,

Yours faithfully,
J. Gayathri devi.
(J.GAYATHRI DEVI)

29/4/2015.

THE PRINCIPAL
Dr. Kamakshi Institute of Medical Sciences and Research,
No.1, Radial Road, Pallikaranai,
Chennai-600 100.

CHENNAI 29/4/15

Om Sakthi

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MELMARUVATHUR - 603 319.

Kancheepuram District, Tamil Nadu, INDIA

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Approved by the Government of Tamil Nadu G.O. Ms. No. 801 & 169, H&FW(ME.II) Dept. Dt. 07.06.1993 & 22.05.2007

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Affiliated to The Tamil Nadu Dr. MGR Medical University, Chennai Rc. No. 21904/Affln. (3)/93, Dt. 14.12.1993

Recognized by Tamil Nadu Nurses & Midwives council, Chennai - Ref.No.368/NC/99 Dt. 12.08.1999.

Accredited with 'A' Grade by "NAAC" with CGPA of 3.04 on a 4 point scale

Dr. N. KOKILAVANI, M.Sc.(N), M.A., M.Phil., Ph.D.,

Principal.

CERTIFICATE OF VALIDATION

This is to certify that the tool which consists of two sections (section – I: Demographic variable & clinical variable, section – II pain assessment scale & Modified health assessment Questionnaires) prepared by J. Gayathri Devi II year M.Sc (Nursing) student of Padmasree College of Nursing is found to be valid for her study titled "A study to assess the effectiveness of reflexology on pain and activity of daily living of Osteoarthritis patient attending outpatient department of Dr. Kamatchi Memorial Hospital at Pallikaranai, Chennai".

Name: Dr. N. Kokilavani, M.Sc(N)., M.A., M.Phil., Ph.D.,

Designation: Principal

Signature

PRINCIPAL
ADHIPARASAKTHI COLLEGE OF NURSING
MELMARUVATHUR - 603 319
TAMILNADU

CERTIFICATE OF VALIDATION

This is to certify that the tool which consist of two sections (section- I: Demographic variable & clinical variable, section -II : Pain assessment scale & modified health assessment Questionnaires) prepared by J.GAYATHRI DEVI, II Year MSC(Nursing) Student of Padmasree College of nursing is found to be valid for her study titled "A Study to assess the effectiveness of reflexology on pain and activity of daily living of osteoarthritis patients attending outpatient department of Dr.Kamatchi Memorial Hospital at Pallikaranai, Chennai".

Name: M. REENA

Designation: COURSE DIRECTOR/
PRINCIPAL - AHS

Signature 29/04/2015

DR. KAMAKSHI INSTITUTE OF MEDICAL SCIENCES AND RESEARCH
CHENNAI

THE PRINCIPAL
Dr. Kamakshi Institute of Medical Sciences and Research,
No.1, Radial Road, Pallikaranai,
Chennai-600 100.

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MATRICULATION HIGHER SECONDARY SCHOOL
Montfort Nagar, Palayaseevaram PO
Kancheepuram Dist. PIN - 631 606.
E-mail : montfortmca@gmail.com
Ph : 044 - 6727 6003,

Date :

7th AUGUST 2015

This is to certify that the dissertation prepared by Ms. J.GAYATHRI DEVI, Msc. (N), II year student of Padmasree College of Nursing, Walajabad, Dist. Kanchipuram, has been over-viewed by me. The english grammer has been checked and corrected in her study titled "A Study to Assess the Effectiveness of Reflexology" on pain and activity of daily living of Osteoarthritis patients attending out- patient department of Dr. Kamakshi Memorial Hospital at Pallikaranni, Chennai.

VICE PRINCIPAL
MONTFORT CENTENARY ACADEMY
MATRICULATION HIGHER SECONDARY SCHOOL
MONTFORT NAGAR, PALAYASEEVARAM
KANCHIPURAM Dist - 631 606
Email - mcamatrichss@yahoo.in
Phone : 044 - 6727 6003

சான்றிதழ்

திருமதி. ஜா. காயத்ரிதேவி, M.Sc., (Nursing) இரண்டாம் ஆண்டு வாலாஜாபாத், பத்மஸ்ரீ செவிலியர் கல்லூரியில் பயிலும் மாணவி தனது ஆராய்ச்சியில் பயன்படுத்திய வினாத்தாள் தமிழ் இலக்கண முறைப்படி சரிபார்க்கப்பட்டது மற்றும் பிழைத்திருத்தம் செய்யப்பட்டது என சான்றளிக்கப்படுகிறது.

இப்படிக்கு,

முனைவர் அமுத. இளவழகன்,
M.A.,M.Phil.,B.Ed.,Ph.D.,
இணைப்பேராசிரியர்,
தமிழ்த்துறைத்தலைவர்,
பச்சையப்பன் ஆடவர் கல்லூரி,
காஞ்சிபுரம்-631501.